



House of Commons
Science and Technology
Committee

Proposed merger of British Antarctic Survey and National Oceanography Centre

Sixth Report of Session 2012–13



22502904792



House of Commons
Science and Technology
Committee

Proposed merger of British Antarctic Survey and National Oceanography Centre

Sixth Report of Session 2012–13

Report, together with formal minutes

*Ordered by the House of Commons
to be printed 31 October 2012*

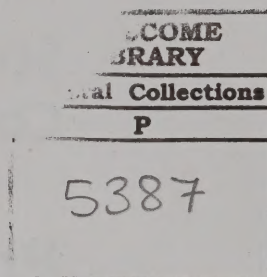
HC 699
Published on 31 October 2012
by authority of the House of Commons
London: The Stationery Office Limited
£13.50

Science and Technology Committee

The Science and Technology Committee is appointed by the House of Commons to examine the expenditure, administration and policy of the Government Office for Science and associated public bodies.

Current membership

Andrew Miller (*Labour, Ellesmere Port and Neston*) (Chair)
Caroline Dinanage (*Conservative, Gosport*)
Jim Dowd (*Labour, Lewisham West and Penge*)
Gareth Johnson (*Conservative, Dartford*)
Stephen Metcalfe (*Conservative, South Basildon and East Thurrock*)
Stephen Mosley (*Conservative, City of Chester*)
Pamela Nash (*Labour, Airdrie and Shotts*)
Sarah Newton (*Conservative, Truro and Falmouth*)
Graham Stringer (*Labour, Blackley and Broughton*)
Hywel Williams (*Plaid Cymru, Arfon*)
Roger Williams (*Liberal Democrat, Brecon and Radnorshire*)



The following members were also members of the committee during the parliament:

Gavin Barwell (*Conservative, Croydon Central*)
Gregg McClymont (*Labour, Cumbernauld, Kilsyth and Kirkintilloch East*)
Stephen McPartland (*Conservative, Stevenage*)
David Morris (*Conservative, Morecambe and Lunesdale*)
Jonathan Reynolds (*Labour/Co-operative, Stalybridge and Hyde*)

Powers

The Committee is one of the departmental Select Committees, the powers of which are set out in House of Commons Standing Orders, principally in SO No.152. These are available on the Internet via www.parliament.uk

Publications

The Reports and evidence of the Committee are published by The Stationery Office by Order of the House. All publications of the Committee (including press notices) are on the Internet at <http://www.parliament.uk/science>. A list of reports from the Committee in this Parliament is included at the back of this volume.

The Reports of the Committee, the formal minutes relating to that report, oral evidence taken and some or all written evidence are available in printed volume(s). Additional written evidence may be published on the internet only.

Committee staff

The current staff of the Committee are: Dr Stephen McGinness (Clerk); Jessica Montgomery (Second Clerk); Xameerah Malik (Senior Committee Specialist); Darren Hackett (Senior Committee Assistant); Julie Storey (Committee Assistant); Henry Ayi-Hyde (Committee Office Assistant); and Nick Davies (Media Officer).

Contacts

All correspondence should be addressed to the Clerk of the Science and Technology Committee, Committee Office, 7 Millbank, London SW1P 3JA. The telephone number for general inquiries is: 020 7219 2793; the Committee's e-mail address is: scitechcom@parliament.uk.

Contents

Report	Page
Summary	3
1 Introduction	5
Polar science	5
British Antarctic Survey and National Oceanography Centre	5
Proposed merger	6
Our inquiry	7
2 NERC's consultation	8
The topic for consultation	8
The strategic case	8
Business case for the merger	9
Managing research vessels	10
Geopolitical considerations	11
Environmental concerns	12
3 Conclusion	13
 Formal Minutes	 14
Witnesses	15
List of printed written evidence	15
List of Reports from the Committee during the current Parliament	16

Summary

In September 2012, the Natural Environment Research Council (NERC) announced a consultation process on proposals to merge the British Antarctic Survey and National Oceanography Centre. It argued that there was a strong strategic case for the merger, arising from scientific synergies between the organisations, a drive to maximise the social and economic impact of scientific research output and a need to make the most cost-effective use of marine and polar infrastructure. NERC was due to make its final decision on merging these institutes in December 2012. However, in October 2012, it announced that this decision would be brought forward, citing concerns about the effects of uncertainty regarding the future of the organisations.

A number of serious concerns have been raised with us about the prospect of merging the British Antarctic Survey and National Oceanography Centre, and the way in which the consultation has been handled. We consider it important that these concerns are addressed by NERC before any further action is taken. NERC has not properly consulted on whether a merger is the best way to achieve its objectives for marine and polar science. It has not provided an adequate evidence base to support its case for a merger, with the absence of projected cost savings being particularly notable. In addition, NERC does not appear to have given adequate consideration to the British Antarctic Survey's geopolitical role when drafting its consultation proposals. Nor has it demonstrated an awareness of UK political commitments on protecting the environment, and polar regions in particular.

We recognise that NERC is facing a number of financial challenges. However, it has not made the case that merging the British Antarctic Survey and National Oceanography Centre would help meet these challenges. NERC should consider whether its aims could be achieved by means other than a merger. Future consultations should be carried out with better engagement with scientists and other stakeholders.

1 Introduction

Polar science

1. Polar science gives an insight to the working of key global mechanisms; polar regions influence global sea level, the carbon cycle, and ocean circulation. Polar ecosystems and marine biodiversity are also of significant ecological and economic importance.¹ The Southern Ocean in particular has a “disproportionately important” influence upon the Earth system, as it connects the major ocean basins, links shallow and deep components of overturning ocean circulation currents, and influences global biochemical cycles.²

2. Britain is a leading participant in polar science and Antarctic affairs. The size of the UK’s scientific operation in Antarctica, and the number of peer-reviewed papers produced from this operation, are second only to the USA.³ The majority of these papers were authored or co-authored by the British Antarctic Survey.⁴

British Antarctic Survey and National Oceanography Centre

3. The British Antarctic Survey (BAS) is often described as a jewel in the crown of British science.⁵ For over 60 years it has been responsible for the majority of Britain’s scientific research in and around the Antarctic.⁶ It counts amongst its research successes the discovery of the Antarctic ozone hole,⁷ the development of the Antarctic Treaty,⁸ and successful negotiation for a marine protected area in the Southern Ocean.⁹ The Science Minister described the British Antarctic Survey to us as a “national and international asset” producing world class environmental science.¹⁰ The British Antarctic Survey employs approximately 400 staff and is based in Cambridge, UK. It operates three research stations in the Antarctic (Rothera, Halley and Signy), two stations at South Georgia (King Edward Point and Bird Island), five planes and two ice-strengthened ships.¹¹ The Natural Environment Research Council (NERC) is the British Antarctic Survey’s parent body and provides the majority of its funding.¹² The British Antarctic Survey has a flat cash settlement from NERC through to 2015. However, NERC has “concerns that continuing pressures on its funding and the impact of external factors such as the price of fuel, may

¹ http://www.antarctica.ac.uk/about_bas/publications/pspe.pdf

² Written evidence submitted by BAS, para 22 - MS22

³ Written evidence submitted by BAS, para 11 - MS22

⁴ Written evidence submitted by John Dudeney - MS33

⁵ See, for example, <http://www.independent.co.uk/news/science/exclusive-british-polar-research-in-crisis-7627014.html>

⁶ http://www.antarctica.ac.uk/about_bas/our_organisation/who_we_are.php

⁷ http://www.antarctica.ac.uk/about_antarctica/geography/ozone.php

⁸ Written evidence submitted by BAS, para 12 - MS22

⁹ http://www.antarctica.ac.uk/about_bas/news/news_story.php?id=1054

¹⁰ See oral evidence transcript

¹¹ Written evidence submitted by BAS – MS22

¹² Though other funding is used from research grants and external contracts.

cause problems for [the British Antarctic Survey] in maintaining the logistics it depends upon to deliver its science”.¹³

4. The National Oceanography Centre is a NERC-owned research centre. It was formed in April 2010 by the merger of NERC-managed elements of research bodies in Liverpool and Southampton.¹⁴ It undertakes research “to address the oceans’ influence, impacts and potential to help address the big societal challenges of food and energy sectors, biodiversity and climate change”.¹⁵ A “significant” part of the National Oceanography Centre’s income comes from NERC’s national capability funding line, which has been “constrained” in recent years.¹⁶

Proposed merger

5. In June 2012, NERC announced that there “is a strong strategic case for the merger of the British Antarctic Survey (BAS) and National Oceanography Centre (NOC)”.¹⁷ It gave the following reasons for this proposal:

- “Growing awareness of the scientific synergies between marine and polar science and the opportunities to integrate these areas of science more closely to address the most ambitious scientific questions;
- The need for a long term vision for translating ocean and polar science into timely, beneficial economic and social impact, given the critical role of these ‘frontier environments’ in addressing the challenges of increasing pressures on natural resources and rapid environmental change; and
- Recognition of the increasing costs of providing major marine and polar infrastructure and of the need to plan and deliver this in the most cost-effective way, particularly at a time of downward pressure on public finances.”¹⁸

6. In September 2012, NERC launched a consultation entitled “BAS/NOC merger”.¹⁹ This asked for views on a number of issues relating to a possible merger, with the intention that NERC Council would consider a scientific and business case for a merger in December 2012.²⁰ However, on 24 October, NERC announced that this decision would be brought forward to 1 November. NERC cited concerns about the effects of uncertainty regarding the future of the two organisations as the reason for the change.²¹

¹³ <http://www.nerc.ac.uk/press/releases/2012/04-bas-funding.asp>

¹⁴ <http://noc.ac.uk/about-us/our-organisation>

¹⁵ Written evidence submitted by NOC, para 1 - MS18

¹⁶ Written evidence submitted by NOC, para 28 - MS18

¹⁷ BAS/NOC merger consultation document, <http://www.nerc.ac.uk/about/consult/bas-noc-merger-consultation.pdf>, para 1 (referred to hereafter as “Consultation document”)

¹⁸ Consultation document p1 para 1, <http://www.nerc.ac.uk/about/consult/bas-noc-merger-consultation.pdf>

¹⁹ Consultation document, p1, title, <http://www.nerc.ac.uk/about/consult/bas-noc-merger-consultation.pdf>

²⁰ Consultation document p2 para 9, <http://www.nerc.ac.uk/about/consult/bas-noc-merger-consultation.pdf>

²¹ <http://www.nerc.ac.uk/about/work/boards/council/bas-noc.asp>

Our inquiry

7. As part of our marine science inquiry we requested written evidence regarding NERC's support for marine science in polar and non-polar regions. During the course of this inquiry we received a number of written submissions regarding NERC's proposals to merge the British Antarctic Survey and National Oceanography Centre. There were clear concerns about these proposals and the manner in which the consultation process was being carried out. Given these concerns, we felt NERC's proposals should be subject to parliamentary scrutiny. We therefore thought it important to take evidence on this issue prior to NERC making its decision on the merger. As NERC will be making their decision the day following our evidence session, we have undertaken to publish this report in time for it to inform their deliberations. We await the decision on the merger with interest and may return to this issue in the future.

8. On 31 October 2012 we heard evidence from Edmund Wallis, Chair, NERC; Professor Duncan Wingham, Chief Executive, NERC; Professor Ed Hill, Interim Director of the British Antarctic Survey and Director of the National Oceanography Centre; and Rt Hon David Willetts MP, Minister of State for Universities and Science. We are grateful to those who provided oral and written evidence.

9. In this report we consider some of the concerns that have been raised with us regarding NERC's consultation process. We comment on the content of the consultation document and raise questions about whether the strategic case for a merger has been made. We highlight the absence of data relating to purported cost savings from the consultation. We also comment on broader issues relating to potential geopolitical implications of changes to the British Antarctic Survey and environmental considerations.

2 NERC's consultation

The topic for consultation

10. In September 2012, NERC announced that it would carry out a “consultation on proposals to merge BAS and NOC”.²² This announcement stated there was a strong strategic case for merging the institutes. However, despite being described by NERC as a consultation on the proposed merger, the consultation document did not request views on whether a merger between the National Oceanography Centre and British Antarctic Survey was appropriate or desirable, or what alternative measures could be taken to achieve the desired strategic outcomes. Instead, the document indicated that “NERC is consulting its staff and stakeholders to invite ideas on how to implement the intended changes”.²³ The decision to merge appeared to have been taken in advance of the consultation. We have been told that British Antarctic Survey staff did not regard this as proper engagement.²⁴

11. Three key senior British Antarctic Survey staff, the Director, Deputy Director and Head of Corporate Services, have recently left the organisation.²⁵ Subsequently, Professor Ed Hill was appointed as interim Director of the British Antarctic Survey by the Chief Executive and Chair of NERC, without an open competition for the post.²⁶ NERC Chair, Edmund Wallis, assured us that this was normal procedure for interim roles.²⁷ Professor Hill is also currently Director of the National Oceanography Centre. In addition to his appointment as interim Director of the British Antarctic Survey, he was selected to lead the merger team and prepare the business case for the merger.²⁸

The strategic case

12. The three reasons given for the proposed merger are: increasing scientific synergy between marine and polar science; translating scientific research into economic and social impact; and improving the cost-effectiveness of operations.²⁹ Whilst these are commendable goals, no evidence was provided in the consultation document that a merger would achieve them. In addition, NERC expanded these objectives later in the document, to include:

- Focusing the UK scientific community on integrating research programmes;
- Tackling the scientific problems of greatest global significance involving the oceans and polar regions within the Earth system context;

²² <http://www.nerc.ac.uk/about/consult/bas-noc.asp>

²³ Consultation document para 2, <http://www.nerc.ac.uk/about/consult/bas-noc-merger-consultation.pdf>

²⁴ Written evidence submitted by Dr Julian Huppert MP – MS35 ; and written evidence submitted by BAS employee – MS36

²⁵ Written evidence submitted by John Dudeney - MS33

²⁶ Further written evidence submitted by NERC , para 14 – MS16a

²⁷ See oral evidence transcript

²⁸ Further written evidence submitted by NERC , para 14 – MS16a

²⁹ Consultation document para 1, <http://www.nerc.ac.uk/about/consult/bas-noc-merger-consultation.pdf>

- Translating scientific knowledge into societal impacts;
- Stimulating the development and application of new observing technologies;
- Securing efficiency savings;
- Maximising resources available for science; and
- Strengthening organisational resilience and operational flexibility.³⁰

Later, in written evidence to the Committee, NERC outlined a third set of objectives for the merger:

- To provide a future pathway for NERC strategic polar science presently delivered by the British Antarctic Survey that provided for the sustainability of the polar science activity;
- To integrate NERC strategic marine science presently delivered by the National Oceanography Centre and British Antarctic Survey to allow for the most ambitious scientific programs addressing the large-scale complex problems of ocean and polar climate system;
- To integrate NERC ship planning, operations and future procurement to provide the most effective, combined strategic use of the NERC marine fleet, and to ensure that future NERC ship provision seeks to optimise blue-water and polar requirements in single ship purchases; and
- To fully engage the wider HEI [Higher Education Institute] community in NERC polar science at a strategic level and through increased interactions with the university sector, and to provide transparent access to all NERC polar infrastructure in a similar manner to that achieved for NERC marine infrastructure.³¹

We have therefore seen three different perspectives on why NERC considers a merger desirable and what the proposed new Centre would achieve. This gives the impression that NERC's thinking on what it hopes to achieve through the merger is still developing and is not yet concluded.

Business case for the merger

13. One of the three “fundamental reasons” for NERC’s decision to change the structures supporting the British Antarctic Survey and National Oceanography Centre is “recognition of the increasing costs of providing major marine and polar infrastructure and of the need to plan and deliver this in the most cost-effective way, particularly at a time of downward pressure on public finances.”³² NERC described the pressures on its funding arrangements as follows:

³⁰ Consultation document para 15, <http://www.nerc.ac.uk/about/consult/bas-noc-merger-consultation.pdf>

³¹ Further written evidence submitted by NERC, para 13 – MS16a

³² Consultation document para 1, <http://www.nerc.ac.uk/about/consult/bas-noc-merger-consultation.pdf>

NERC has had to accommodate a 3% cash reduction in its resource budget, amounting to an 11% real terms reduction by 2014/15. It also had its baseline capital budget reduced by 50%.³³

14. The consultation document stated that:

Quantification of the expected costs and savings arising from the merger will form part of the business case that will be presented to Council in December. The numbers will depend on detailed assumptions which will be made, taking into account comments on the consultation document. It would thus be premature to pre-empt that process by offering figures at this stage.³⁴

No detail or indication was given in the consultation document regarding the possible costs or savings arising from the merger. It therefore appeared that NERC was consulting on proposals for which one of the primary justifications was the need to reduce costs without providing any indication of the extent to which the proposals would result in cost reductions.³⁵ Indeed, NERC Council itself was not due to see a business case for the merger until December.³⁶

Managing research vessels

15. The British Antarctic Survey and National Oceanography Centre manage almost all of NERC's large research infrastructure, for example research ships and polar research stations. The British Antarctic Survey operates two ice-strengthened Royal Research Ships, the RRS *James Clark Ross* and the RRS *Ernest Shackleton*.³⁷ These provide logistics and science support to the Survey's operations.³⁸ NOC operates two research vessels on behalf of NERC, the RRS *Discovery* and RRS *James Cook*.³⁹

16. As part of the consultation, NERC outlined concerns that "the cost of operating NERC's research ships is rising as a proportion of its budget due to fuel, a shrinking resource base etc" and stated that it was "investigating the most effective ways of utilising and sharing these assets".⁴⁰ Under its proposals:

NERC's four Royal Research Ships [...] would become a single fleet within the new Centre with unified management of ship-related functions (e.g. marine operational activities, marine HR, marine engineering, maintenance and ship fuel procurement). The focus for ship management would be at Southampton. In order to operate

³³ Further written evidence submitted by NERC, para 2 – M516a

³⁴ Consultation document para 5, <http://www.nerc.ac.uk/about/consult/bas-noc-merger-consultation.pdf>

³⁵ During oral evidence, Professor Hill stated that the merger would result in savings of £500k per annum. However, this figure, and detail on how it was arrived, is not given in the consultation document.

³⁶ Written evidence submitted by Research Councils UK/NERC evidence, para 11 – M516

³⁷ http://www.antarctica.ac.uk/living_and_working/research_ships/index.php

³⁸ The RRS *James Clark Ross* in particular has some of Britain's most advanced facilities for oceanographic research. http://www.antarctica.ac.uk/living_and_working/research_ships/index.php

³⁹ <http://noc.ac.uk/research-at-sea/ships>

⁴⁰ Written evidence submitted by Research Councils UK/NERC evidence, para 43 – M516

NERC's fleet in an effective and fully-integrated way it will be desirable to harmonise marine staff and a variety of ship management processes and procedures over time.⁴¹

17. NERC has carried out a number of reviews of its ship operations in recent years, most recently in 2008/09 and 2011/12. These reviews have concluded that closer working between research vessels was desirable, where possible, but that the highly integrated nature of the British Antarctic Survey's operations in the Antarctic made the British Antarctic Survey's management of the RRS *James Clark Ross* and RRS *Ernest Shackleton* the most cost effective and efficient option.⁴² The Marine Science Coordination Committee's Marine Research Vessels Group is due to publish a draft assessment of research vessel operations in autumn 2012.⁴³ This is expected to conclude that significant savings would only be achieved by reducing the number of vessels being operated. Changes to management or collaboration would provide only modest savings.⁴⁴ Despite the cost of ship operations being a key driver for NERC's desire to reorganise ship management, no information was given in the consultation document regarding the expected savings to be achieved from changing how the fleet is managed. The outcomes of previous reviews do not suggest that there are significant savings to be made in this respect.

18. We also heard about potential difficulties associated with merging the British Antarctic Survey's polar ships with the rest of the fleet, given their specialist nature. In particular, we heard that safe operation of the British Antarctic Survey's ice-strengthened ships requires different equipment and different skills from its crew, compared to other research vessels.⁴⁵ Changing the management of the fleet could also have implications for the safety of operations at sea, if the ability of staff to respond quickly to emergencies was diminished by a more diffuse management structure, especially as the nature of these emergencies may be unique to polar environments.⁴⁶

Geopolitical considerations

19. The British Antarctic Survey is at the forefront of Antarctic science. However, this is not its only purpose. The Survey has a dual role in carrying out valuable scientific work whilst also contributing to Britain's presence in the South Atlantic and Antarctic. It is notable, for example, that the Science Minister's recent trip to the Antarctic included a visit to the Falkland Islands.⁴⁷ He restated the Government's commitment to Britain's presence in the South Atlantic and Antarctic during our evidence session with him, and stated that this presence would not be altered by NERC's proposals.⁴⁸ The British Antarctic Survey stated that its role included providing advice to the UK Government regarding the polar regions and overseas territories in South Georgia, the South Sandwich Islands and British

⁴¹ Consultation document paras 57-58, <http://www.nerc.ac.uk/about/consult/bas-noc-merger-consultation.pdf>

⁴² Mike Richardson written evidence

⁴³ <http://www.defra.gov.uk/mscc/groups/marine-research-vessels-group/>

⁴⁴ Written evidence submitted by Mike Richardson – MS32

⁴⁵ Written evidence submitted by Dr John Dudeney – MS33

⁴⁶ Written evidence submitted by Dr John Dudeney – MS33; and written evidence submitted by Robert Culshaw – MS34

⁴⁷ <http://www.bis.gov.uk/news/topstories/2012/Mar/science-of-antarctica>

⁴⁸ See oral evidence transcript, NERC also stated this commitment.

Antarctic Territory.⁴⁹ This geopolitical aspect to the British Antarctic Survey's work is notably absent from considerations in the consultation document, save for a brief note that "the name British Antarctic Survey is internationally recognised".⁵⁰ There are therefore serious concerns regarding whether NERC has the competence to take decisions that potentially have such geopolitically significant consequences. During oral evidence, the Science Minister and NERC Chair conceded that there are lessons to be learned from how the geopolitical aspect of this matter have been handled during the consultation.

Environmental concerns

20. NERC identified a number of economic opportunities that it hoped the new Centre would be in a position to exploit. It identified the oceans and polar regions as "frontier environments" where "there will be increasing economic activity in the coming decades—not least because of increasing pressures on natural resources".⁵¹ It also stated that a "key objective" of the Centre would be to "establish itself as a hub for innovation to harness and support growth of widely dispersed UK scientific and technological expertise to exploit these opportunities".⁵² In NERC's long-term vision, the Centre would have a role in "de-risking major investment decisions in hostile, unfamiliar environments".⁵³ The Environmental Audit Committee raised questions with us regarding this commercial focus. It highlighted the importance of advancing scientific research but cautioned that "while such research might incidentally make it easier for those engaged in shipping, fisheries and oil and gas extraction, NERC's research should not explicitly facilitate commercial resource exploitation".⁵⁴

⁴⁹ Written evidence submitted by BAS - MS22, para 10

⁵⁰ Consultation document para 26, <http://www.nerc.ac.uk/about/consult/bas-noc-merger-consultation.pdf>

⁵¹ Consultation document para 18, <http://www.nerc.ac.uk/about/consult/bas-noc-merger-consultation.pdf>

⁵² Consultation document para 20, <http://www.nerc.ac.uk/about/consult/bas-noc-merger-consultation.pdf>

⁵³ Consultation document para 19, <http://www.nerc.ac.uk/about/consult/bas-noc-merger-consultation.pdf>

⁵⁴ Correspondence from the Chair of the Environmental Audit Committee to the Chair of the Science & Technology Committee, 26 October 2012 – MS37

3 Conclusion

21. Britain is a preeminent force in polar and particularly Antarctic science. Given the success of our scientific output in this field and the geopolitical considerations involved in operating in the Antarctic, any proposed change to the organisation of the British Antarctic Survey must have a strong evidence base.

22. **We recognise that there is challenge for NERC to save money.** However, NERC has committed to maintain its Antarctic activity at pre Spending Review 2010 levels.⁵⁵ NERC has argued that this merger would improve the financial management of the centres, and savings appear to be a key driver for the merger.⁵⁶ Despite this, NERC has not presented any information regarding the savings it believes could be made by a merger. We welcomed the Ministers suggestion to establish a ring-fenced funding line for Antarctic infrastructure and logistics. We will respond to his invite to consider this as part of our marine science inquiry.

23. **The consultation has been confused and lacks transparency. In addition, the manner in which the consultation has been handled seems to have had a damaging effect upon staff morale at the British Antarctic Survey.**⁵⁷ The consultation document presented the decision to merge the British Antarctic Survey and National Oceanography Centre as made; it did not present alternatives and does not request views on whether a merger should proceed. The strategic case for the merger presents a number of desirable goals; recognising scientific synergy, increasing research impact, reducing costs, but it does not give any evidence that a merger between these two research centres will achieve these goals, let alone whether a merger is the best way to achieve them. NERC has not provided any meaningful evidence base for the proposals that have been put forward.

24. **We have concerns that NERC has not taken seriously the loss of several senior staff at the British Antarctic Survey.** There are also questions about whether Professor Hill is the most appropriate person to run the consultation and merger, given his role as Director of the National Oceanography Centre and appointment by NERC's Chief Executive as interim Director of the British Antarctic Survey. This could create an impression that the consultation process lacks openness or objectivity.

25. Real concerns have been raised regarding both the content of NERC's consultation and the way in which the consultation has been run. We consider that these concerns require proper consideration by NERC. Given the strength of feeling against the merger, NERC should reconsider whether these proposals are appropriate and seek to properly address the concerns that have been raised by us and others responding to the consultation. **We recommend that before embarking on any merger, NERC considers whether its aims might be achieved by other means. We also recommend that NERC should ensure that future changes are conducted with better engagement with scientists, this Committee and other stakeholders.**

⁵⁵ Further written evidence submitted by NERC, para 6 – MS16a

⁵⁶ Consultation document para 15 and para 1, <http://www.nerc.ac.uk/about/consult/bas-noc-merger-consultation.pdf>

⁵⁷ Written evidence submitted by Dr Julian Huppert MP – MS35

Formal Minutes

Wednesday 31 October 2012

Members present:

Andrew Miller, in the Chair

Stephen Metcalfe
Stephen Mosley
Pamela Nash

Sarah Newton
Graham Stringer

Draft Report (*Proposed merger of the British Antarctic Survey and National Oceanography Centre*), proposed by the Chair, brought up and read.

Ordered, That the draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 25 read and agreed to.

Summary agreed to.

Resolved, That the Report be the Sixth Report of the Committee to the House.

Ordered, That the Chair make the Report to the House.

Written evidence was ordered to be reported to the House for placing in the Library and Parliamentary Archives.

[Adjourned till Wednesday 7 November at 9.00 am]

Witnesses

Wednesday 31 October 2012

Rt Hon David Willetts MP, Minister for Universities and Science Ev 1

Professor Ed Hill, Interim Director of British Antarctic Survey and Director of National Oceanography Centre, **Edmund Wallis**, Chairman of the NERC, and **Professor Duncan Wingham**, Chief Executive of the NERC Ev 5

List of printed written evidence

1	Research Councils UK	Ev 16
2	Natural Environment Research Council (NERC)	Ev 24
3	National Oceanography Centre	Ev 26
4	British Antarctic Survey	Ev 31
5	Dr Mike Richardson CMG	Ev 35
6	Dr John Richard Dudeney OBE	Ev 42
7	Robert Culshaw	Ev 45
8	Dr Julian Huppert, Member of Parliament for Cambridge	Ev 46
9	BAS employee	Ev 46
10	Correspondence from the Chair of the Environmental Audit Committee to the Chair of the Science and Technology Committee	Ev 48
11	Correspondence from the Chair of the Committee to the Chief Executive Officer, Natural Environment Research Council, and Chair of the Natural Environment Research Council	Ev 50
12	Correspondence from the Executive Director, National Oceanography Centre to the Chair of the Committee	Ev 50
13	Correspondence from the Chair to the Director, National Oceanography Centre	Ev 51
14	Further correspondence from the Chair to the Chief Executive Officer, Natural Environment Research Council	Ev 51

List of Reports from the Committee during the current Parliament

The reference number of the Government's response to each Report is printed in brackets after the HC printing number.

Session 2012–13

First Special Report	Science in the Met Office: Government Response to the Committee's Thirteenth Report of Session 2010–12	HC 162
First Report	Devil's bargain? Energy risks and the public	HC 428
Second Report	Pre-appointment hearing with the Government's preferred candidate for Chair of the Medical Research Council	HC 510–I
Second Special Report	Engineering in government: follow-up to the 2009 report on Engineering: turning ideas into reality: Government Response to the Committee's Fifteenth Report of Session 2010–12	HC 511
Third Report	The Census and social science	HC 322
Fourth Report	Building scientific capacity for development	HC 377
Fifth Report	Regulation of medical implants in the EU and UK	HC 163

Session 2010–12

First Special Report	The Legacy Report: Government Response to the Committee's Ninth Report of Session 2009–10	HC 370
First Report	The Reviews into the University of East Anglia's Climatic Research Unit's E-mails	HC 444 (HC 496)
Second Report	Technology and Innovation Centres	HC 618 (HC 1041)
Third Report	Scientific advice and evidence in emergencies	HC 498 (HC 1042 and HC 1139)
Second Special Report	The Reviews into the University of East Anglia's Climatic Research Unit's E-mails: Government Response to the Committee's First Report of Session 2010–12	HC 496
Fourth Report	Astronomy and Particle Physics	HC 806 (HC 1425)
Fifth Report	Strategically important metals	HC 726 (HC 1479)
Third Special Report	Technology and Innovation Centres: Government Response to the Committee's Second Report of Session 2010–12	HC 1041
Fourth Special Report	Scientific advice and evidence in emergencies: Government Response to the Committee's Third Report of Session 2010–12	HC 1042
Sixth Report	UK Centre for Medical Research and Innovation (UKCMRI)	HC 727 (HC 1475)
Fifth Special Report	Bioengineering: Government Response to the Committee's Seventh Report of 2009–10	HC 1138
Sixth Special Report	Scientific advice and evidence in emergencies:	HC 1139

Supplementary Government Response to the
Committee's Third Report of Session 2010–12

Seventh Report	The Forensic Science Service	HC 855 (Cm 8215)
Seventh Special Report	Astronomy and Particle Physics: Government and Science and Technology Facilities Council Response to the Committee's Fourth Report of Session 2010–12	HC 1425
Eighth Report	Peer review in scientific publications	HC 856 (HC 1535)
Eighth Special Report	UK Centre for Medical Research and Innovation (UKCMRI): Government Response to the Committee's Sixth Report of session 2010–12	HC 1475
Ninth Report	Practical experiments in school science lessons and science field trips	HC 1060–I (HC 1655)
Ninth Special Report	Strategically important metals: Government Response to the Committee's Fifth Report of Session 2010–12	HC 1479
Tenth Special Report	Peer review in scientific publications: Government and Research Councils UK Responses to the Committee's Eighth Report of Session 2010–12	HC 1535
Tenth Report	Pre-appointment hearing with the Government's preferred candidate for Chair of the Technology Strategy Board	HC 1539–I
Eleventh Special Report	Practical experiments in school science lessons and science field trips: Government and Ofqual Responses to the Committee's Ninth Report of Session 2010–12	HC 1655
Eleventh Report	Alcohol guidelines	HC 1536 (Cm 8329)
Twelfth Report	Malware and cyber crime	HC 1537 (Cm 8328)
Thirteenth Report	Science in the Met Office	HC 1538
Fourteenth Report	Pre-appointment hearing with the Government's preferred candidate for Chair of the Engineering and Physical Sciences Research Council	HC 1871–I
Fifteenth Report	Engineering in government: follow-up to the 2009 report on Engineering: turning ideas into reality	HC 1667 (HC 511, Session 2012–13)

Oral evidence

Taken before the Science and Technology Committee on Wednesday 31 October 2012

Members present:

Andrew Miller (Chair)

Stephen Metcalfe
Stephen Mosley
Pamela Nash

Sarah Newton
Graham Stringer

Examination of Witness

Witness: **Rt Hon David Willetts MP**, Minister for Universities and Science, gave evidence.

Q1 Chair: Minister, can I welcome you here to this morning's session? Before we start, I need to put on record a declaration of interest, inasmuch as my daughter is employed on a NERC contract at the National Oceanography Centre. That is on the record. Can I thank you for agreeing to speak to us at such short notice? You will understand that the timing was not entirely within our gift. Can you explain to us what you know about the NERC decision being brought forward?

Mr Willetts: Thank you very much, Chair. Perhaps I may begin by also saying I am clear that the British Antarctic Survey is a national and international asset. It delivers world-class environmental science in both polar regions and this country's strategic presence in Antarctica and the South Atlantic. It will not be closed down, because we have a very strong commitment to the dual mission.

When it comes to timing—again, I am grateful to you, Chair, for your flexibility in bringing forward this hearing—the decision is for NERC council, but we all had a concern that there was such a level of public concern, which in turn could potentially be affecting morale among staff at BAS, that, as the consultation deadline had passed, there was a strong case for trying to resolve the issue promptly. That is why the council brought forward its meeting. With this Committee's flexibility in bringing forward its hearing, it will be possible for the council when it meets tomorrow to draw on points made during this Committee hearing today, which is a very useful contribution to the discussions it will have.

Q2 Chair: Can I take it from that you agree with us that this matter, although quite rightly it is for the NERC council, is of such public import that it is legitimate for this Committee to examine the evidence?

Mr Willetts: It is absolutely legitimate for the Committee to do so. I am very aware of the Haldane principle. Ultimately, the organisation of operational matters within the UK is a matter for the council. I am sure that this Committee and its deliberations will be taken very seriously by the council. There is a Government interest as well, most crucially the dual mandate because of the particular sensitivities of the Antarctic and the fact that our presence there is a

scientific one and we have made a commitment to maintain our footprint in the South Antarctic.

Q3 Chair: We would go further and say there is a parliamentary interest, which is why we were concerned that we were not consulted about the change of dates.

Mr Willetts: On that, there were operational issues. People were just trying to move the decision forward so as to reduce the time of uncertainty, and, as I said, I am grateful to the Committee for moving your hearing forward.

Q4 Chair: If there were changes of senior management structure, do you take the view that they ought to take place through a process of open competition?

Mr Willetts: There are Government guidelines. I am not actually familiar with the detail. Clearly, senior posts like the chief executive of NERC are publicly advertised with rules on procedure. At what point they become operational decisions within the organisation I am not totally clear, but clearly senior posts—chairman of the council and its chief executive—are major posts that are advertised in accordance with civil service rules.

Q5 Graham Stringer: Thirty years ago, just after the Falklands war, I understand from visits to the British Antarctic Survey that its funding was under threat then. Margaret Thatcher put a stop to that for geopolitical reasons. Isn't it the case that this decision can't be taken just on scientific economic grounds and that the geopolitical considerations are one of the larger issues?

Mr Willetts: I would challenge your assumption that this is about cuts in funding. This Committee has rightly questioned me on the whole subject before. We have got a cash-protected, ring-fenced science budget. Within that there is the NERC budget and within that the BAS budget. The NERC is ultimately responsible for delivering an efficient organisation that maximises the amount of science it can get for that budget, but, yes, this is a very unusual case in that there is strategic significance in Britain maintaining its level of activity in the South Atlantic and the Antarctic.

That is a Government commitment. NERC knows that it is part of its remit that it should deliver this. Under

the dual mandate model it is also responsible for delivering that presence. I have always made that clear and NERC absolutely understands that is the Government's commitment. There was nothing in any of the proposals in the consultation document that would have affected that commitment. It was not in any way going to change activities down in the Antarctic area; it was about what the organisation should be between logistical support and other issues in Cambridge, Southampton and Liverpool.

Q6 Graham Stringer: Baroness Warsi says that Ministers have been deeply involved in this decision. Does that include you?

Mr Willetts: This is where the Haldane principle comes in. Certainly, NERC has kept me informed of what it is doing. I have been very frank with the Committee. The Government have a strategic commitment to our presence in the Antarctic, which I am absolutely committed to sustaining. NERC understands that. There comes a point when operational matters about the organisation of management and support vessels within the UK have to be a responsibility of NERC. That is why it will be the council that will decide at its meeting tomorrow what to do in the light of the responses to its consultation.

Q7 Graham Stringer: It is good to have you here because you probably understand the Haldane principle better than any other Minister. Are you content that this is just about administration and not interfering with the science in any way whatsoever?

Mr Willetts: There is a scientific judgment here. I report it to the Committee; I don't claim any expertise on it. There were two arguments. There was a managerial argument about whether or not you could save money by merging some of the functions. The science argument is that, partly as a result of climate change, polar science and oceanographic science are converging and these hitherto distinct organisations, with slightly distinct groups of scientists, need to be brought together. I don't claim any competence in assessing that, but that argument was put forward in the consultation document. Some scientists have endorsed it; others challenge it.

Q8 Stephen Metcalfe: You have made it very clear that you value what is happening down in the South Atlantic; it has great scientific and strategic value. Bearing in mind that value, do you think the decision about the future should be made by NERC, or would it be best made somewhere else outside NERC?

Mr Willetts: I trust NERC and its council to make that decision. There are wider considerations—NERC is absolutely aware of them—of which the most important is maintaining our presence in the Antarctic and South Atlantic. When you get to operational decisions, they are a matter for NERC council, but it doesn't operate in a vacuum. That was why there was a consultation exercise and that is why we have this Committee hearing, and I am sure it will take account of the views that have been expressed in the consultation.

Q9 Stephen Metcalfe: But bearing in mind the strategic importance, if you don't like the outcome of that decision, what mechanism do you have to make sure that our presence, given the geopolitical importance, is maintained?

Mr Willetts: On the strategic presence, we have made it absolutely clear to NERC that it has that obligation. NERC completely understands that. It did not intend that the consultation would throw that commitment into any doubt. I have been disappointed that some of the comment has assumed that there is a question mark about that commitment. That commitment stands. NERC understands it; the Government are committed to it. Everything they do in this area has to comply with that dual mandate, as it is called. I think it is probably the only and certainly the most vivid example of a kind of dual mandate within the entire science budget.

Q10 Stephen Metcalfe: If you didn't like the decision, what mechanism would you have in place to change it to protect the Government's strategic aims?

Mr Willetts: The Government ultimately have the power to issue directions to a research council. That exists; that is a power. I haven't had any occasion to use that power, and I do not envisage it will be necessary. NERC understands the strategic requirement that we have set them and is happy to work within that framework, but with all research councils that power exists.

Q11 Stephen Metcalfe: So you would not want to see decisions like this moved anywhere else; you are quite happy with NERC continuing to make decisions.

Mr Willetts: I have been reflecting on lessons from this consultation exercise. It has brought home to me the extreme sensitivity of our presence in the Antarctic. I think that, wrongly, there was a fear that the consultation on this particular proposal meant there was a threat to our presence in the Antarctic. I have been assured throughout that there isn't. Perhaps it would help the Committee if I referred to one of the things I have been looking at in the light of this consultation, and I would be very interested in the Committee's views on this. I can't pre-empt the next spending review, but I do consider there is an argument that NERC should have a discrete funding line for Antarctic infrastructure and logistics from within the ring-fenced science budget that would ensure a visible UK commitment to maintaining the Antarctic science and presence.

Q12 Graham Stringer: Is that a commitment or an idea?

Mr Willetts: We have not yet done it. I will reflect on it further. The Committee may have ideas on it. The thought I share with the Committee, and I think it would help to deal with some of the misunderstandings that have arisen in the past few weeks and months, is that identifying specifically a line within the NERC budget, as provided by us within the science ring fence—a discrete funding line for the Antarctic infrastructure and logistics—might be a way of tackling some of these underlying

31 October 2012 Right Hon David Willetts MP

concerns that come to the surface every time there is a debate about any possible changes to BAS.

Q13 Pamela Nash: Minister, Baroness Warsi has made it very clear that the Government are committed to maintaining “their ships, aircraft and base in the Antarctic”. Does that leave research and scientists exposed to potential cuts?

Mr Willetts: As to the way in which NERC operates—I don’t want to stray into things that are its responsibility—it has a responsibility for maintaining a presence. There is then a kind of internal competitive bidding process for science projects. My understanding—it will probably be better explained by the experts from NERC—is that then you want to conduct some particular science in the Antarctic. I have had the great privilege of being down to see the excellent science it does there. If you want to do a particular investigation of some aspect of Antarctic wildlife or a potential impact of climate change in the Antarctic, you are one of a range of people bidding for the science funding from within NERC to do your project. Your project has to be judged against other science projects. One of the reasons we have world-class science is that that is how it is done, and that is the way NERC does it.

Q14 Pamela Nash: I understand that, but is that pool of money not going to shrink if there is a commitment to maintain the same funding at the moment for the infrastructure it has?

Mr Willetts: That is one of the challenges that NERC faces, which it knows. That is why within that ring-fenced science budget—I have discussed this with the Committee before—every pound saved by improved efficiency is an extra pound for science. To be fair to NERC, however the consultation exercise has gone, its original proposal was driven by a desire to look as if it could save on overhead cost so as to liberate more funding for science. That was the motivation behind the proposals on which it has been consulting.

Q15 Pamela Nash: But potentially there could be reduced funding for research in Antarctica.

Mr Willetts: NERC has a given budget. Fact number one is that, if it can make savings on efficiencies, it liberates more money for science. Fact number two is that a whole range of science proposals comes to NERC, as to all research councils, and it awards funding to what it judges as scientists—it is not for me to judge—to be the best science project. If you want to do some science anywhere in the world, you have to stack up against alternative bids, but all that is done within the framework of the commitment to maintain our footprint levels of activity in the Antarctic.

Q16 Pamela Nash: As far as I understand it, it is not entirely clear how much is going to be saved by efficiencies, so our job as a Committee is to look at where that money is coming from. If that footprint is to be maintained, is there a potential that the National Oceanography Centre is going to lose out as a result of this merger?

Mr Willetts: I think that is a question better handled by NERC. These are operational matters. As we know, there are these three centres in Liverpool, Cambridge and Southampton. The balance between them was one of the issues in the consultation document. I know that very strong feelings have been revealed in the consultation and NERC council will consider it. At that point it really is a decision for the council and I respect its role. I don’t think it would be right for me to go any further into its specific decisions about the balance between the functions in those different locations.

Q17 Sarah Newton: You mentioned that you had the opportunity to go and visit one of the bases in the Antarctic. Would you share with the Committee some of your experiences there and how they have been useful to you in coming to the particular views that you have expressed to us this morning?

Mr Willetts: It was an extraordinary privilege. Especially as this year is the centenary of Scott, and, quite rightly, there has been a lot of interest in polar science, it was a good year to make the visit—I should emphasise with no extra flights laid on—using the air bridge and the schedule within it for flights. At Rothera I saw excellent science; I saw very strongly committed individuals—people who were passionate about what they did. For example, taking a sample of an ice core going back 800,000 years enables us to track changes in climate over hundreds of thousands of years. Using British scientific expertise, the aim is to find the deepest, lowest land on the Antarctic to try to find an ice core that could go back a million years. It is quite extraordinary science.

I was very impressed by the dedication of the people there. To be frank, I thought that the condition of some of the buildings I saw there clearly needed investment and refurbishment, and it is a challenge we face. It is a capital issue, not a science ring-fenced issue, but it is a challenge I am very aware of.

Q18 Sarah Newton: Do you think from what you saw there that this proposed merger would improve things?

Mr Willetts: The proposed merger in the consultation document was not, as I understand it, intended to have any effect either way on the BAS presence down there. It was really whether the different oceanographic support vessel arrangements and the logistics supplied for oceanography and polar science could be combined. It is absolutely crucial, whatever the outcome of NERC’s decision, that there be no threat to that level of scientific activity in the Antarctic. Let me stress again that I have great admiration for the work those scientists do and for the work of BAS as a whole.

Q19 Sarah Newton: You mentioned that you saw some of the infrastructure—the buildings—was a bit old and tired and needed refurbishment. That is the capital budget. You mentioned that that is somehow separate from the ring-fenced science budget. Could you elaborate a little on that?

Mr Willetts: The science budget is to maintain current activity. It brings together for the first time all the

different budgets we have, both HEFCE quality research funding and research council funding for current activity. Outside that, there is the need to maintain science capital. We inherited from the previous Government some big capital reductions and have tried in successive budgets to provide for new investment in science capital, and we have had some success in that. We have well over £500 billion of extra science capital. It is very complicated down in the Antarctic because the planning cycle is unusually long. You can only do building work in the Antarctic summer, and you need to plan it a long time in advance. There are some tricky technical issues. Some of the more recent buildings in Rothera are built to very high standards of insulation; some of the older ones, to be honest, probably don't meet the insulation standards of a suburban semi in Croydon. Some of them just don't meet modern standards. You would have to go there and see that. The Government cannot make any commitments at all on this because of the long time horizons involved, but I understand the need for some investment down there.

Q20 Chair: The quote about suburban semis could come back and haunt you at the bi-election shortly. Going back to two quite distinct but overlapping areas, we all agree—I suspect everyone in this room agrees—on the importance of maintaining the science in Antarctica, but on the geopolitical side even the name is a sensitive issue. I don't know about you, but I was lobbied at my party conference by the Falkland Islands Council, who are very anxious about not sending the wrong messages about British withdrawal from the South Atlantic. Do you regard that as an important issue?

Mr Willetts: I do regard it as an important issue, and as part of my visit to the Antarctic in February I went via the Falklands and had an opportunity of discussing some of their interests in creating an environmental science centre there, which I strongly support. The BAS name is an historic one; it is associated with some excellent science discoveries—for example, the hole in the ozone layer. It does have significance.

A lesson we can all learn from this consultation is that, although NERC had no intention of affecting our presence in the South Atlantic and the Antarctic and, as I understand it, eroding the polar science done by BAS, because it is such a highly sensitive issue these concerns, however misplaced, have arisen again. It is one of the reasons I am interested in the idea of a distinct line within the NERC budget. We need to have some kind of rational discussion about operational issues in the UK that doesn't get caught up with these issues that are incredibly emotionally significant in terms of our foreign policy about our commitment to the Antarctic, which is absolutely clear and is as robust today as it ever has been.

Q21 Chair: Can I push you a little harder on the idea of a line within the budget? Our sister Committee

DECC said that there is an argument about merging North Pole and ocean work. There is an obvious overlap. Equally, there is an overlap in the South Atlantic. There are overlaps with other research programmes also funded by NERC and other agencies. Isn't the simple reality that there aren't any clean boundaries one can draw here?

Mr Willetts: It is fascinating. Following the debate among the scientists—I respect their views—there are some people who say to me that Antarctic science is completely different from Arctic science. Indeed, one of the issues has been the extent to which BAS and its work in the Antarctic should or should not be seen as being in parallel with work done in the Arctic. These are deep waters, and at this point a science Minister has to stand back and the scientists have to advise.

Q22 Chair: You mentioned the work on the hole in the ozone layer as an example. There are other locations scattered all around the planet, both onshore and at sea, working on atmospheric science.

Mr Willetts: You, Chair, have the advantage of being briefed by your daughter, but I will bow to your superior expertise on that point. I am sure you are right.

Q23 Chair: Touché. Finally, when we develop this discussion further in terms of the relationships between the various providers of funding in the science programme, do you think that this is opening the discussion even further for a broader look at the relationships between the various funding agencies?

Mr Willetts: On that I am quite conservative. As you know, because the Select Committee has discussed this, when I arrived as the Minister at the last election I didn't think it was a priority to reorganise things. My view was that the structure we inherited of the arrangements of the seven research councils and the TSB made a lot of sense. I wanted people to focus on the real issues, science activity being sustained, rather than what is often a displacement effort to reorganise things. In the course of the last two and a half years I have had every possible proposal, from the suggestion that there should be one single research council with everybody and everything merged together, to the other extreme where people want lots of mini-research councils with a narrow focus. I am comfortable with what we inherited and have no desire to distract people by a large reorganisation. There is a triennial review of the research councils under way and there may be particular proposals there, but I am not aware of any idea of reorganising them.

Chair: Minister, we are extremely grateful to you for coming at short notice. We know you have a busy diary. Thank you very much for attending.

31 October 2012 Professor Ed Hill, Edmund Wallis and Professor Duncan Wingham

Examination of Witnesses

Witnesses: **Professor Ed Hill**, Interim Director of the British Antarctic Survey and Director of National Oceanography Centre, **Edmund Wallis**, Chairman of the NERC, and **Professor Duncan Wingham**, Chief Executive of the NERC, gave evidence.

Q24 Chair: Good morning, gentlemen. Thank you for attending. For the record, could I invite you to introduce yourselves?

Professor Hill: I am Professor Ed Hill, interim director of the British Antarctic Survey and executive director of the National Oceanography Centre.

Edmund Wallis: I am Edmund Wallis, chairman of the NERC council.

Professor Wingham: I am Duncan Wingham, chief executive of NERC.

Q25 Chair: For the record, I restate my declaration that you heard me make at the beginning of the earlier session. Of the three drivers for the merger, which is the key: scientific synergy, increased research impact or cost?

Professor Wingham: First of all, we welcome the opportunity you have given us to provide you with evidence before our council meeting. We appreciate that you will wish us to feed this back before the meeting tomorrow. We are grateful to you for providing us with this opportunity to speak to your Committee before the meeting tomorrow.

You have to appreciate that the situation we are in is one where there are two clear drivers. The first is the increasing understanding over the last decade or more of the way in which, partly due to climate change and partly because of the way the natural system works, we are facing very large-scale and complex processes in our climate system in both the north and south, which are grand challenges for our science. Since we wish to maintain our UK polar and marine science and the levels of excellence it has enjoyed for many years, it is appropriate for us to consider how we can best bring together our resources to attack problems of that size.

Equally, in the written material I gave to the Committee late last week you can see very clearly that, on the one hand, we are under cost pressure from the top and, over this CSR period, a reduction of the order of 11% in real terms. At the same time, the cost of this large-scale infrastructure is rising quite steeply. Our estimate is that by the end of the CSR—we have not altered it during the CSR programme—it will rise by 7% at the bottom. It is very clear that we need to think hard about how we bring to bear the marine and polar skills that we have in our centres and, more broadly, across our wide university community to try to make sure that we can keep our focus on these large-scale problems.

To come to your question directly, there is no question that, if we say all of these things are important—synergy, impact and, as David made clear, if we can find them, cost savings that we must make in these circumstances—synergy is undoubtedly the driving thing that caused us to think this way.

Q26 Chair: That I understand, but I want to push you on the cost issues. The oceanographic centre has

been through a redundancy exercise; pay and rations are already managed centrally through central services arrangements, as I understand it, through the joint research councils' activities. What are the savings that could be accrued, and where would they come from in a merged organisation?

Professor Wingham: In principle, as to savings, if we merge an organisation we can make it flatter and provide one instead of two finance functions and one HR function instead of two. There are some opportunities for looking at the way in which our ships are organised and the extent to which those can be brought together. We estimate that through the merger we might be able to realise savings of the order of £500 k per year. That may not seem much to you, except I would observe that we have been seeking, wherever we can, savings of £500 k per year here and £300 k per year there. This is the situation that we are in.

Q27 Chair: None of that saving would be accrued from cutting any further scientific effort at the coal face.

Professor Wingham: No. Indeed, there are reductions as you have referred to under the present spending review. We cannot “not” respond to the circumstances we are in, and those are happening now; they are not simply located in BAS. We are looking across all our centres. This is hardly something we welcome. We are in a situation where we have to compress all of our funding lines across the piste. We try to do this from the point of view of science excellence, sustaining our community and all of these considerations that are normal in a research council, but these are happening anyway as part of the settlement we have agreed with all our centres and in effect are a choice through our responsive mode lines; and these are unaffected by the merger considerations.

Q28 Chair: You will appreciate, because a lot of it has been in the public domain, that a massive amount of information has been sent to us by people very closely associated particularly with the Antarctic research programmes, both current and former employees of the system in its broadest sense, ranging from the Foreign Office through to people who have directly managed research programmes. We have been told that the difficulty in closer scientific collaboration is more about the award of NERC grants and how they work than any institutional barriers between BAS and NOC. Would you comment on that?

Professor Wingham: I would have to find out the exact date this occurred, but certainly five years ago NERC changed the way in which it was handling some of the funding to its institutes and essentially put it into a common pot under what we now call research programmes. The purpose of working in that way was to ensure that we brought together the skills in all our centres and our HEIs in order to attack the

big problems as we saw them and to bring together the best skill in the country. I think everyone agrees in the round that this has been very effective and has achieved that ambition.

I would point to two very topical examples. One of the largest of these is our Arctic programme. This has been enormously successful in bringing together all kinds of expertise from all over our universities and centres. Only yesterday I visited CEH and had explained to me how techniques with radio carbon that CEH had been using for many years to understand Scottish peat are now going to be employed in the Arctic to understand how the entire Arctic tundra is warming and what methane releases will occur. That programme is already building widespread terrestrial Arctic skill and expertise which previously—I know this because I chaired the NERC polar strategy some years ago—was not regarded as one of the strongest parts of our polar portfolio.

Again, the programme in West Antarctica—the so-called iSTAR programme—is bringing together our BAS logistics and science and the marvellous efforts of our universities too in order to understand one of the great big problems, which is how the ocean is starting to cause the West Antarctic ice sheet to accelerate its slide into the ocean.

When you move your funding in that direction it is necessary for the centres involved to respond to that challenge. The change in funding was not done as a step function; it was done over a period of time in a gradual ramp to allow the centres to adjust to the new situation, build up new skills and train their staff in this more competitive world.

If one looks across the piste, our centres have done marvellously well in responding to this challenge. CEH, which I suspect you will know went through considerable change some years ago, at least in my personal view is now one of the jewels in the NERC crown. It is a truly excellent organisation, which has responded enormously well to these changes. It is fair to say that BAS has not found itself able to respond in quite such an agile way to this change in our funding. None the less, council's view is firm—speaking personally, I agree with it—that it has been such a successful way of funding in order to bring our expertise together that we wouldn't want to change that. It has been very successful.

Q29 Chair: Going back to the volumes of information sent to us as a result of the proposed change, with hindsight, having seen some of the information—as I said, it has been largely in the public domain—did you really seek the right kind of detail before moving towards a decision?

Professor Wingham: We considered that we needed to restabilise the situation for the CSR. We have made very clear that the Antarctic infrastructure and our polar programmes are being sustained for this CSR, so the whole context of what we are doing is about looking at the way the costs of this infrastructure are rising and our budgets are going, looking to the future, and saying, “How can we best organise ourselves in the future?”

NERC council took the decision in this CSR period to sustain almost in real terms our large-scale

infrastructure, and I think that was the correct decision. The weighting of judgment was not quite the same, and I have laid that out in our evidence to the Committee. Large-scale infrastructure is a long-term investment for science, and it would be inappropriate for us to try to change that radically over a single CSR period, so responding in the way we did allows everybody to understand the case and adjust accordingly.

We then looked at how we can best organise ourselves to deal with these big challenges into the future. As David said, we consulted with BIS and the Minister and also with the FCO. We discussed in detail with both Departments of State the appropriateness of our proposals and whether or not they felt those were sensible things to do but, more importantly, whether they affected, as they saw it, these wider issues.

In retrospect, I have been surprised by the volume of commentary. A lot of it is related to the undoubted tension between looking at things purely through a frame of science excellence and the wider national interest, and a considerable amount of this is tied up in a way that is not quite the way we see it, because we see it in rather more clear terms.

Q30 Stephen Metcalfe: Could you expand a little on what the purpose of the consultation process itself was? There is a perception, accurately or inaccurately, that it was how the merger should take place rather than the reasoning behind it.

Professor Wingham: If one embarks on a consultation, first of all, it is important to have a document. What are we consulting on? Asking the question whether one should do something isn't very useful. What we wanted to be able to show to council was what the views were if we went in that direction; what the weaknesses and strengths of such a thing were; whether we were correct in thinking, “Here's the scientific achievement”; and whether we had fully understood the risks. We wanted to consult. I think we put out a document that was at the right level. We are not consulting down in the detail; this is a strategic judgment and decision. We wanted to do this in a way that informed the decision-making process and wasn't something that was simply after what was in effect a decision. In the round, this would be my answer to your question.

Q31 Stephen Metcalfe: So how much weight will you give to the consultation responses when making your decision tomorrow?

Professor Wingham: We have brought together a summary document of the main points that come through from the consultation. It probably won't surprise you that the major points aren't that many. For example, one point that comes through very clearly is whether there are alternative methods to achieve the same aim. There is a group of concerns that relates much more to the wider national interest than to the narrower science, and so on. We have summarised those in what we consider to be a very fair way, and we have asked Robert Allison, the VC of Loughborough, to examine that process in some detail and comment upon it. That summary of the consultation has already been distributed to council

31 October 2012 Professor Ed Hill, Edmund Wallis and Professor Duncan Wingham

members, as I am sure you would appreciate, together with the commentary we have received from Robert Allison. We will put that to council and say these are the main issues and ensure that that is fed into its deliberations tomorrow.

Q32 Stephen Metcalfe: Did you give any consideration to the fact that this Committee was also interested in this issue, because you brought the decision forward? Did that play any part in your deliberations?

Chair: Putting it bluntly, we feel that you considered Government but not Parliament.

Professor Wingham: To answer your question quite frankly, no, we didn't consider this inquiry in coming to that decision. We were focusing on what we felt was a need because of the widespread public concern and the effect that the press coverage, much of which is highly misleading, was having on our staff. That was the discussion we had with our council. Council felt that in the circumstances it was only practical and sensible to try to bring the matter to a close, given that we had had a consultation and we were in a position to condense it and report on it.

I apologise to you that perhaps we didn't make enough effort to contact you and work out an arrangement. I think we would none the less have done this. Perhaps we missed the step in not speaking to you directly and seeing what might be a sensible way forward, but it was not at all our intention to imply that we don't regard your Committee as important. We are very happy to be here and are glad that you gave us an opportunity to explain to you why we have taken the steps that we can. Again, I apologise to you. It certainly wasn't our intention or in any sense deliberate to usurp or perturb your inquiry. We just felt this was a sensible thing to do in the circumstances.

Edmund Wallis: It was a misstep, which we regret. We are pleased we are here; it wasn't deliberate. It is hugely beneficial for us to be here before we see the council tomorrow. We apologise and we've learned.

Q33 Sarah Newton: We have heard a lot today, quite rightly, about focusing in on the science, but some concerns have been raised by the Environmental Audit Committee, another Committee of Parliament. Within the consultation document there is a whole section that refers to de-risking decisions for investors and businesses. Their concern and mine is whether it is really the role of NERC to facilitate the commercial exploitation of polar environments.

Professor Hill: The consultation document sets out very clearly the understanding in relation to Antarctica in particular around the exploitation of both living and non-living resources. Living resources are highly regulated in terms of exploitation under the Antarctic Treaty, and the exploitation of minerals is prohibited under the treaty. That is very clear and it is stated in the consultation document; there is a very clear and absolute caveat specifically around Antarctica.

To step back to the more general issue, it is absolutely appropriate for a research council and research centres to engage in the timely translation of basic science into beneficial impact for society, whether that is for

public policy advice, regulation, human quality of life or economic business benefit. NERC's royal charter is absolutely clear on the subject that that is an appropriate thing for a research council to be engaged in.

In talking about these statements, the consultation document refers to extreme environments, which include the polar regions and the deep sea. All these regions are becoming increasingly impacted, either indirectly through climate change or increasingly directly by human activity. These pose enormous risks. These are environments that we are not familiar with generally. Many of them are quite fragile in terms of their ecosystems, so there are considerable risks in operating in these environments. There are risks to the environment, to those making investments in those areas, to reputations and of a wider geopolitical nature in all these areas. It is absolutely appropriate that the best science is available in order to inform all of those who are concerned either with being directly engaged in those activities or regulating them, both public policy and industry.

In the 21st century these regions will come under increasing pressure from human activity, and it is absolutely right that the best science available is there to inform the value judgments made by society, political and legal judgments, as well as the wider ethical issues. That is what it is about. I don't think there is any conflict with NERC's charter or remit. It is an entirely appropriate thing for science to be involved with.

Q34 Sarah Newton: I think people will find the clarification immensely reassuring that it is around the subsequent commercialisation of the scientific endeavour rather than commercial business activities in those regions. I think we would all wholeheartedly agree on the fragility of the environment. Obviously, the Antarctic is protected by these very rigorous treaties, but the Arctic region isn't to the same extent. Obviously, NERC's Arctic office is ever-more important. Will the funding for that office be maintained as part of the changes, and where will this fit into the overall budget?

Professor Hill: That is a very specific point. The Arctic office is funded in the context of the Arctic programme more generally to be able to facilitate access to the Arctic and the engagement of the university community in Arctic affairs. There is scientific input, for example, that goes into the Arctic Council where the UK is an observer, so the Arctic office is a bit of a clearing house to facilitate that activity.

It is quite clear that the Arctic is of increasing importance both scientifically and for the reasons I explained. Indeed, some of these exploitation and risk issues are much more prevalent in the Arctic, which is not covered by the treaty at all. It is absolutely imperative that we are able to engage in this.

In terms of polar sciences, an observation is that the way in which Arctic science is delivered in the UK is quite different from the way it is delivered in the Antarctic. The British Antarctic Survey has been a clear point of focus for Antarctic science, the flow of advice into government and for participation in the

treaty. The science community delivering Arctic research is largely university-based in the UK and in a number of research institutes. It is a dispersed and somewhat fragmented community that desperately needs focus to be brought to it.

One of the purposes of the Arctic office is to do that, but it is absolutely a journey that we need to pursue in bringing much more coherence into Arctic-related science in the UK. This was one of the other objectives stated around the proposal in the consultation document as a way of drawing out a much more coherent framework for the delivery of true polar science in both the Arctic and Antarctic, and trying to bring some of the strengths in the Antarctic into the Arctic.

Q35 Sarah Newton: You are describing the problem really well and I think we would all agree with you, especially the importance of the Arctic and the need for a more co-ordinated approach, but you didn't actually answer my question. If the proposals going forward were adopted, would the funding for the office continue?

Professor Wingham: The answer is that for this CSR we have confirmed all of these fundings. Clearly, a research council cannot presume on another CSR outcome, as indeed David, the Science Minister, said earlier, but for the purposes of this CSR we are sustaining all of these things in place and we are not attempting to change those fundings.

Professor Hill: With this answer, the purpose of what I was trying to say is that the functions we are trying to deliver here—greater coherence, co-ordination and access to infrastructure in the Antarctic and Arctic—is what we want to develop and maintain.

Q36 Graham Stringer: Can I just follow up one of your answers to Andrew's question about the reasons for the potential merger? You explained that there were scientific arguments about putting together the investigations of the Arctic and Antarctic. This Committee has had a long-term interest in the British Antarctic Survey. The last time I was there that point was put and scientists discussed it. None of us who are politicians are shrinking violets, but the argument was pretty intense and severe, so much so that it was calmed down. There is an opposite argument, isn't there, that the science at the two poles is different? One is land-based and one is not. One can go on. How much scientific representation did you have against this merger?

Professor Wingham: First of all, bear in mind that this is a consultation; no decision has been taken. My own view, looking at the consultation, is that the science arguments against don't come through strongly, but I would observe that one of the key tasks of a research council is to balance arguments for continuing in one domain, bringing together domains, understanding whether at any given point in time atmospheric science needs more funding because of a crucial issue, or whether this time we have to turn our attention to very dramatic developments in the understanding of the core of the earth, or whatever the balance happens to be.

As to the arguments that the Antarctic is terrestrial and the Arctic is an ocean, to some extent it depends on what you include in the Arctic. Many people would include the Greenland ice sheet and permafrost tundra, which means there is a great terrestrial part to the Arctic. The Antarctic is commonly used to describe not simply the continent but the great circumpolar current that goes around the continent. But what we really see now is the interaction with the cryosphere. For example, in the Arctic we see that the ice is melting away and the entire ocean circulation is spinning up faster as a consequence. In the south, we see glacial movements causing an offload of ice, but we know that these are being driven by spin-offs from the circumpolar current coming up underneath the sheet, melting it out and drawing it down.

There are very strong arguments that there is a great deal of common understanding to do with fluid dynamics, the way water and ice interact and the way that the atmosphere is bearing on both of these systems. Those are quite strong arguments. NERC council is a body that has on it some extremely respected and broad scientists. One has to accept that that is what the council is there for. It is to balance these arguments across the scientific piste and make judgments about the relative balance between them. This is where we are.

Q37 Graham Stringer: I just want to make it clear that there were strong arguments. You have put the pro case quite clearly and explicitly, but you accept and you have listened to the arguments that don't take that point.

Professor Wingham: Of course one has to balance the two.

Q38 Graham Stringer: Professor Hill, you have got yourself into the most extraordinary position, haven't you? You are the director of NOC; you are effectively the current director of the British Antarctic Survey. You have been running the consultation. I understand that you are going to draft a report. You were part of the discussions, and I assume you will present the report or be part of the discussions when they take place. If I was a bookie, you must be a firm favourite to take over the merged institution. Do you think it is helpful to have one person who was previously associated with one institution, however distinguished the role, being in such a crucial position?

Professor Hill: There are a number of elements to that, and I might take different parts of them. Yes, I am director of the National Oceanography Centre and I am in an interim role as director of the British Antarctic Survey. I am also a member of NERC's executive board and a corporate director of NERC. I am responsible for taking broader views and responsibility, and on a number of occasions I have done broader work for NERC. The task fell to me as interim director. You can ask the chief executive why he appointed me, but I certainly have some experience in the managing of large, complex institutions, in particular those with large research infrastructure, which is a particular issue.

I have been able to draw together into the merger team that I am chairing representatives from the British

31 October 2012 Professor Ed Hill, Edmund Wallis and Professor Duncan Wingham

Antarctic Survey in senior leadership roles around the main functions of the science, large research infrastructure and support services, and their opposite numbers from the National Oceanography Centre, along with key directors from NERC's corporate headquarters.

If I was the sole player in this, there might be some cause for the concern that you raise, but there are checks and balances in the situation. For example, it will be the council that makes the decision. The council is informed by a whole range of evidence, and they are people of independent minds and will not be unduly influenced by me. In addition, the merger team has been subject to periodic scrutiny of its work by the chief executive and a member of council whose specific role was to challenge what we have done and ask us to look at various issues. That is what we have done.

So I believe that my role has been very much a facilitator to bring the most appropriate teams together, get people to work together to think how this proposal might work and develop some practical conclusions to advise and inform a decision. That decision will be made by council, which is an independent body, and I am providing one stream of advice.

Q39 Graham Stringer: I wasn't intending to impugn your scientific reputation in any sense at all, nor was I saying that you had a monopoly of the decisions, but you had got yourself into a unique position and a controversial situation. Can you tell me exactly what experience you have had previously of running large organisations?

Professor Hill: I run the National Oceanography Centre, which I have done since 2005, and then with the subsequent merger with the Proudman lab in Liverpool. That is an organisation of about 500 staff, with a budget of the order of £45 million to £50 million a year. It runs major research infrastructure with global class research vessels in the National Marine Equipment Pool. That is an organisation of similar scale in budget and staff as the British Antarctic Survey; they are very comparable.

Q40 Graham Stringer: With that background, would you accept that the staff of BAS might not consider you to be impartial?

Professor Hill: There are perceptions from all quarters, no doubt. I believe that I have a reputation for being fair-minded and capable of making clear and balanced judgments, and there are numbers who would attest to other difficult situations I have been in when the issue might well have been seen to be one where there was an opportunity for a biased view but there was a very fair—and attested so—outcome. For example, I was responsible for leading the prioritisation of the whole of the marine science national capability funding budget for NERC between 2010 and 2011. That was a very wide process and it was fair.

Professor Wingham: I don't think the suggestion that Ed got himself into a certain position would be fair. We needed to work with a situation where the previous management of BAS had, for whatever its

reasons, decided to leave. We—I actually—had to make a decision as to what to do about that in the interim period. For me, it was entirely natural to turn to the person in our organisation who we, together with consultation with my chair and more widely, felt was best equipped through experience and track record to handle this situation until we resolved the outcome that we wished to see. We had complete confidence in Ed to do that. We are very happy with the way that has gone forward, so we just need to be clear about that.¹

Q41 Graham Stringer: Are you happy with the high senior staff turnover at BAS?

Professor Wingham: I don't see how in any circumstances one could be happy with senior staff turnover. It is the case that three have chosen to depart. It is clear that, if we go forward into the future, perhaps without a merger, we need leadership in there that responds to the modern challenges and the need for this organisation to work better with a wider cross-section of people, and to up its game in bringing itself into line with our other centres so that we are confident that all of our centres have a sustainable and positive future.

Q42 Graham Stringer: Mr Wallis, how many directors of NERC institutes are appointed without external competition?

Edmund Wallis: All the jobs are advertised. In the ones I have sat in, the candidates come from a fairly wide background.² One of the problems we are touching on here is that there are very few good scientists. We are talking about the production and development of high-quality science. That is what the council's remit is about, so we need good scientists. Often in these positions we need good managers. There are few good scientists and few good managers, and there are even fewer good managers of science. Therefore, the field is not as wide as you would probably think, unlike in the general business sense.

¹ The witness later clarified that, in this comment I attempted to summarise, in a sentence why the description that Professor Hill 'got himself into a' position was not a fair one. However, this summary sentence does not make clear that I first appointed Professor Hill as Interim Director in February 2012, during a period when Professor Owens, the previous Director, was on sick leave/special leave. Professor Owens had not left the organization at that time and other members of the BAS senior management team remained in post. I later asked Professor Hill to continue as Interim Director when Professor Owens left NERC. This clarification reinforces my view that the comment about Professor Hill is not a fair one.

² The witness later clarified that, NERC has almost invariably appointed Directors to its Research Centres through open competition; there have been occasional instances where a Deputy has stepped up into the role and subsequently been confirmed on the basis of their performance in it, but these have been very much the exception and the post of Director BAS in particular has generally been filled through competition. There has never been any doubt that the post of Director of the merged Centre—or of BAS as a NERC Centre in its own right if the merger did not go ahead would be appointed through open competition.

Like most organizations, NERC does not appoint interim Directors through competition. The requirement for interim Directors results from a need to immediate action; you do not have the scope to mount a competition and go through a drawn out process.

This is quite a specialist area. I can understand where you are coming from, but when this was put to me my view was—dare I say?—that, in my opinion, probably Ed was our best and most experienced director.

Q43 Graham Stringer: So you appointed him without competition.

Edmund Wallis: Not to his job originally, but this is an interim one. You wouldn't normally go out to competition for an interim director. It's expensive and takes a lot of time, and it's not going to last for very long. If you were a bigger company you would have an internal director dealing with the organisational development of the company. We don't have that; we can't afford that, so we have to do more of these ad hoc approaches to it, but it is the quality of the guy that attracts me and the council.

Q44 Graham Stringer: It is a well understood argument that the quality of a person is usually best tested, particularly when there is a potential conflict of interest, in open competition. You would understand that.

Edmund Wallis: I do understand that, but I don't think it is appropriate for an interim role, which is going to be under the very close scrutiny of me, the CEO, the council and, for that matter, everybody else. That is why you are asking the question, isn't it?

Q45 Graham Stringer: It is indeed. We had some questions earlier on about potential cost savings and senior staff turnover. Professor Hill, can you explain the basis of sending out the possible redundancy notices to BAS staff when you don't know what the savings are going to be?

Professor Hill: Yes, and the straightforward answer to this is that we are dealing with two separate and unconnected issues. The programme of voluntary redundancies and a call for volunteers for redundancy, which went out on 24 October this year to staff in the British Antarctic Survey, is a completely separate matter from the question of merger or otherwise. It is about the funding levels in this Comprehensive Spending Review period, as the chief executive has already explained. This is a programme that is going on across all of NERC's centres; it has been handled in different ways.

Q46 Graham Stringer: This is on the basis of consistent cash and no increase for inflation.

Professor Hill: Yes, which still means a real-terms budget reduction. The National Oceanography Centre has just been through a series of staff losses. This is happening in other NERC centres and this is what is happening in the British Antarctic Survey, so it is completely separate from the discussions on the merger. If that was not happening this would still be taking place, so the merger discussion and decision is altogether different from that. This is simply playing out the budget reductions and reprioritisation of science that is going on as a result of spending reductions in this CSR period.

Q47 Graham Stringer: So it is nothing to do with the merger; it is entirely to do with the cash limits on budget.

Professor Hill: Yes.

Q48 Graham Stringer: You are able to put a very precise cash figure on that.

Professor Hill: Yes.

Q49 Graham Stringer: Can you tell us what it is?

Professor Hill: I can elaborate on that now. What we are looking to save in the British Antarctic Survey by the end of this CSR period is a £3 million cash reduction. We have sought broadly to balance that—it is about half and half—between savings on the large research infrastructure and the science. The first question I was asked when I arrived at the British Antarctic Survey was whether I was going to cut all of the science because of the inflexibilities in the infrastructure—in other words, whether all of the £3 million would come from science. That is obviously a risk in an organisation like the British Antarctic Survey.

I am very pleased to say that I was able to work with the senior team of the British Antarctic Survey to share those funding reductions in this CSR period broadly evenly between research infrastructure and science. We have done that in research infrastructure in ways that involve a small number of post reductions—probably about five—and in a series of pragmatic, sensible measures, either for reducing costs or increasing revenue generation around research infrastructure in a way that has no material impact on the level of presence or activity in Antarctica. We have shared those proposals. Those are being implemented now.

That leaves about £1.5 million to be saved in the science area. We are going to make about £400,000 of savings through non-pay measures, leaving £1.1 million to be saved from staff cost reductions, which amount to something like 18 posts depending on the salary level of the people who actually leave.

Q50 Graham Stringer: Do you have a figure for the savings from the merger?

Professor Hill: That was given earlier. The savings that would result from some of the direct issues—

Q51 Graham Stringer: That is just a point about BAS.

Professor Hill: No. The issue around the merger is the total savings that you get from the new structure, so you would save around senior management levels and in a number of the back office functions: one HR function instead of two; one finance function instead of two. The savings across the board from replacing two existing structures with a merged one, which would seem sensible in a merged organisation, is about £500,000 a year in those kinds of functions. That is not to say going into a future CSR period that you would not have created opportunities to manage things differently where there would be potential scope, but that all depends on what happens in future CSRs.

31 October 2012 Professor Ed Hill, Edmund Wallis and Professor Duncan Wingham

Q52 Graham Stringer: With all this extra work, what work have you had to put on one side from the NOC?

Professor Hill: First, I am blessed and very grateful for a very fine senior management team in the NOC whom I am able to delegate to and who take on a number of responsibilities. They have taken on a number of delegated activities. For example, I am not taking as close an interest as I would otherwise have done in a major activity that NERC has initiated around the evaluation of the quality of science in research centres. That has been much more highly delegated than if I had remained at the NOC full time. That is one example of an area where I am putting in less effort than otherwise.

Q53 Stephen Mosley: Professor Hill, in your answer to Graham you mentioned the cost of the research infrastructure. When we went to the British Antarctic Survey last year, we heard that the biggest cost in terms of the capital programme was the new ships, and I imagine the operational costs of the ships would also be large. As far as it goes across the whole of NERC, I would have thought that, with the ships being such a big cost, you would have done some sort of review into how you can save costs. Have you done that?

Professor Hill: Yes. NERC has done three reviews around ships; in fact it has done more than that but I would be going into deep time. There was a review in 2000 around ship management. More recently, there was a review in 2009. Another review was started in 2011, but it had a rather specific focus. I would say its conclusions were rather overtaken by events, so that is not really concluded.

The perennial question that has arisen in some of those reviews is whether NERC should manage its ships together as one fleet. It does seem rather strange to the outsider, and indeed many insiders in NERC, that we have two research vessel operations of two ships, which is a small number for a fleet management operation, within the same organisation and very little read-across between them. The perennial question is why NERC doesn't have a single fleet instead of two times two.

In 2000, the review highlighted that a number of benefits could be accrued by bringing them together, but it concluded at the time that there were a number of difficulties. The very important integration of the polar ships with the polar Antarctic infrastructure was one; there were a number of management changes going on in the blue water ship management at the time and it was all considered a bit too difficult, so the conclusion was not to do it.

In 2009, the issue was looked at again to see whether something might be done, although there was another flavour to that, in that the question whether the ship management ought to be outsourced to an outside contractor was an element of it. Again, this was quite a contentious issue. I think the operators of the blue water ships were quite open-minded about the idea of outsourcing ship provision.

In the British Antarctic Survey there were a number of constraints, not least some of the geopolitical ones we have been talking about, so the idea of merging

the fleets as a precursor to outsourcing was not seen as a good idea, given the very different constraints that applied to each other. Nevertheless, that review did identify areas where perhaps there ought to be more synergies around the joint programming of the ships and trying to have more harmonisation on marine engineering, which then led to a subsequent review about whether we could harmonise engineering and so forth.

This is an issue that has come up repeatedly. I would characterise the conclusions of these generally as recognising that there seem to be benefits, which are somewhat hard to quantify, but there is also quite a strong element of putting it into the too-difficult-to-do box. I would also remark that neither of those reviews was conducted within the context of the present sets of real constraints that we now understand the research infrastructure is placing on the rest of the NERC budget, so it was perhaps what you might describe as a more relaxed environment and it was easier to put things in the too-difficult-to-do box.

Q54 Stephen Mosley: Ultimately, those reviews were done but they came up with a conclusion that is not exactly what you are doing at the moment.

Professor Hill: Yes.

Edmund Wallis: I wasn't involved, but I did insist that the last review was done. A lot of my experience is in the private sector. As Ed said, if a business basically has four ships but splits them into two, with one set of crew on one set of agreements and another on another, despite it being the same trade union, would we operate them in all time scales from procurement to decommissioning? Would we get the right balance of the ability to supply, do research and ice-breaking in four ships this way? The private sector CEO would come in one morning, maybe in a bad temper because his wife had upset him, get the two together and say, "Put them together", and within three months it would have been done. I am not saying we should do that here. Probably we should but we won't do it here. A different sort of approach in a different area would have produced a different result, but we are where we are.

Q55 Chair: Can I push you a little further on this? When we visited the research councils we gently skirted around the issue of whether their structure was right and, given that they had merged pay and rations and other central service issues, why not the rest? We were given a very robust argument about why that should not be the case. Surely, there is a parallel here in terms of BAS and NOC. There must be ways of gaining efficiency savings from things like the ship management programme that aren't predicated on merger. Isn't that correct?

Professor Wingham: That is right. Among other things, I am the senior reporting officer on a team that is looking at how we may integrate and merge across the research councils to the extent that it is useful. There is a strong view across RCUK chief executives that each of these councils represents and understands the detail of its scientific community and we should not alter that. Clearly, though, there is an increasing understanding that councils already do work together,

but they ought to be working together much more effectively in this domain.

Q56 Chair: We would agree.

Professor Wingham: I can give you an exact example. Since I took over we have been moving teams of people together so that we work much more effectively with BBSRC, because, for example, in the whole domain of food security, bringing the two councils closely together and looking and acting on integrated research programmes is a very obvious win-win. There is more we can do together, and I think you will see us increasingly work in that way.

Q57 Chair: In the private sector there are complex companies that cross lots of disciplines. I think of companies like Unilever as an example, which have wildly different product streams and research programmes but integrate beautifully together without merging, changing and losing historic names. That's right.

Professor Wingham: It is fair to say.

Q58 Stephen Mosley: Following on from that and just leaping ahead a bit, it might be worthwhile asking about the Marine Science Co-ordination Committee's review of all seven research ships in total. Have NERC and BAS been involved in that process?

Professor Hill: Yes. NERC has been involved in the Marine Science Co-ordination Committee process. It was this Select Committee some years ago that recommended the creation of that committee. It also noted in its report investigating the oceans that there was an issue around lots of research ships in the UK community and maybe something ought to be done to bring this together, so this is a response.

A task team was set up by the Marine Science Co-ordinating Committee, chaired by Marine Scotland. It looked at seven vessels: the four NERC research ships—two blue water ships and two polar ships—and three ships that support fisheries and environmental survey from Cefas, the Centre for Environment, Fisheries and Aquaculture Science, Marine Scotland and the Agri-Food and Biosciences Institute of Northern Ireland. NERC was represented on that committee by Mr Geraint West, head of National Marine Facilities Sea Systems based at the National Oceanography Centre. A draft outline report has been produced. It has not been finalised; it is still in draft form and won't be published until the spring. The British Antarctic Survey had an opportunity to comment on it and provide input to it, but there was a single NERC representative.

I won't prejudge its conclusions, but there are some obvious observations in it. One is that NERC's research ships, which have a global and polar remit, have a rather different functionality from the three other vessels that are dealing with UK coastal waters and have a mission driven much more by statute as opposed to a science mission of the global research vessels. Consequently, the opportunities for integration and synergy between that functionality are a little more limited than one might have expected. There are some thoughts there about how, nevertheless, one might move towards a more

co-ordinated operation of the fleet and much more sharing of the programme, seeing if you can move science between one ship and another. That might help NERC with an issue raised by the report on investigating the oceans about whether the UK science community has enough access to coastal vessels, for example, where the vessels we are talking about there are coastal.

NERC has been very positively and actively engaged in that report, but those are the issues around it. I don't think it poses any particular threat to NERC or the British Antarctic Survey vessels in particular. It presents opportunities, but, for the reasons I have already elaborated, I don't think one will see any dramatic outcomes as a result of that report in terms of the way those ships are operated.

Q59 Stephen Mosley: Can I go back to the specifics of what you are proposing? You are proposing basically to have the ships managed from Southampton. In order to ensure integration of the polar operations and so on, would it not be best to consider having more in Cambridge than in Southampton?

Professor Hill: The proposal is to bring all the research infrastructure, including bases, aircraft and ships, under a single unified management, with the focus on ship management of the four vessels being at Southampton, with the rest of the polar continental infrastructure being based in Cambridge, so there is a clear Cambridge/Southampton division of labour there.

It is also important to emphasise the difference between what I refer to as strategic and operational management. Let me explain what I mean. The issues around the ships are really about where the budget is held, how one plans fleet maintenance and how the fleet is deployed, for example. It is likely that in the next CSR, if we need to save more money, we might get into the area of thinking, as we already are, whether we should do more chartering of the vessels or maybe even lay them up for periods of time. Then there are questions as to which is the right ship to charter for which period and how you shunt science from this ship to that. Therefore, it makes sense to look at that in an integrated way. That is what I call strategic level management: the annual planning of the cycles, and so forth. That is the ship management function at Southampton.

Clearly, there is an operational issue around day-to-day operations. There are issues arising from the ships every day. In particular, for vessels working in polar waters there are complex operational issues. If a ship gets stuck in ice for a period, you have to change the plan and so forth. It affects the date of resupply of a base and so on. For that kind of operational day-to-day decision making you need a very close interaction between the polar ship and the rest of the polar infrastructure. For that reason, the proposal is very clear that you would need those kinds of operational people based in Cambridge working very closely on a day-to-day basis to ensure the safe and effective operation of the ships, but as for the strategic management of the fleet it seems appropriate that that

31 October 2012 Professor Ed Hill, Edmund Wallis and Professor Duncan Wingham

function is focused at Southampton, where there is considerable expertise in fleet management.

Q60 Stephen Mosley: You are talking about the safety and efficiency of operations. We have had a number of submissions suggesting that merging the fleet could cause problems in that respect. Have you done any assessment of changes to safety procedures?

Professor Hill: Yes, but there is an ultimate backstop to this that is very clear. The management of safety issues in NERC, as with any organisation, has very clear lines of accountability that go to the chief executive, who is ultimately responsible. The proposed structure that we have been thinking about as the basis for how the centre might work in this area in particular has absolutely unambiguous reporting lines in that respect.

Ship safety management, though, is a very serious business and is highly regulated. The International Safety Management Code under the International Maritime Organisation—IMO—is regulated in the UK by the Maritime and Coastguard Agency and so forth, and it is subject to rigorous scrutiny and audit. It simply would not be possible to design a management structure for an integrated fleet without it first being scrutinised by the MCA for compliance with the ISM code, and we would be told in no uncertain terms if it was non-compliant. There is an absolutely clear backstop to the way in which both safety is managed and the governance arrangements for it. It would simply have to be compliant in those ways.

Q61 Pamela Nash: It is clear to us that the British Antarctic Survey has not just a scientific research role but it is also of strategic and political importance in maintaining a UK presence in the South Atlantic. Was that taken into consideration when the decision to merge was taken?

Professor Wingham: The first observation I would make is that whether or not we did this merger would not alter that situation. It doesn't bear on it particularly. The merged object would have the same responsibilities as the unmerged object. We have made very clear on more than one occasion that for this CSR we are committed to retaining this capability. The merger does not alter the need to attend to this wider national concern as well as the more focused scientific ones.

Q62 Pamela Nash: Is that something you have discussed with the Foreign Office?

Professor Wingham: Yes. Since I took over we have been having regular meetings with BIS and FCO officials to discuss the general situation and the specifics. We have also been discussing with them this merger proposal.

Q63 Pamela Nash: Is this going to be taken into consideration in the naming of the new centre?

Professor Wingham: Yes. We have already stated that we would not do anything to alter the use of the name British Antarctic Survey in and around Antarctica. We have stated that this is the case and agreed it with the FCO. We have no interest in perturbing the historical

presence down there in size, naming convention or anything else.

Q64 Pamela Nash: Just to be clear, the centre would operate under a different name in that area from the rest of the world.

Professor Wingham: It may or may not, but in all events the term British Antarctic Survey would be retained for all of the Antarctic infrastructure, the supply, the bases and all the logistics around that activity.

Q65 Pamela Nash: To be clear, you said that you had regular meetings with officials in the Foreign Office. Have you had meetings with Ministers?

Professor Wingham: As David indicated, we have ongoing discussions with the Minister for Science. I have not myself discussed this with FCO Ministers. In terms of interaction, that is something that those officials then take up with their Ministers.

Q66 Pamela Nash: Has anyone from NERC met with Foreign Office Ministers with regard to this decision?

Edmund Wallis: No, and in a sense I don't feel it is necessary to do so. When Duncan took over, the change I made was one that said, "Duncan, I want you to be the interface with the Foreign Office from now on." He has done that. From all the feedback that I have had from these meetings, I believe the relationship is very good. I didn't see any need to interfere with it. Of course I do see David Willetts quite frequently and we sensitively discuss things like that, so I gave him the same impression. Around Christmas/January I wondered whether I should try to see a Foreign Office Minister, but I didn't feel it was appropriate or that I had good reason to; I didn't think it was necessary, so the answer is no. Nor has anybody else seen a Foreign Office Minister. I am sure that if they had wanted to see us or me they would have done so.

Q67 Pamela Nash: Do you think that, on an issue with such political significance on our presence in the South Atlantic, a research council is qualified to make that decision without input from Foreign Office Ministers?

Edmund Wallis: It depends on what decision we are making. Let Duncan talk about that.

Professor Wingham: First of all, let's be clear that we are a research council and our parent Department is BIS. We then report in a formal way to our Science Minister. It is inappropriate for someone in our position to be approaching Ministers from other Departments. Indeed, that can lead to considerable difficulties. So the appropriate thing is that we work with our Ministers; we work with Foreign Office officials, and in a sense it is then for our Minister and those officials reporting to their Ministers to decide what is the appropriate interaction between the wider Government Departments.

As I said before, there is a tension between this wider national interest and other scientific matters in NERC. This is not an unusual tension. There are tensions between atmospheric science and the science of the

core and between terrestrial ecology in Britain and studying earthquakes in the Pacific ocean. There are all sorts of tensions, but this is of a particular and peculiar kind.

For reasons that I think are very clear to all of us, this tension, which has lain latent, is becoming greater. The reasons for it are very clear. They are to do with the dropping of our headline budget and the rising costs of this infrastructure. We have to acknowledge that tension and find ways as we go into the future of handling this in a way that is to the satisfaction of all parties. There is no doubt in my mind that much of the wider commentary about this merger is not related to much of the detail of the merger itself; it is to do with the absolute recognition of that tension and, depending on how people see it, it generates a certain concern about the way the future must evolve.

I must say, and here I can only speak personally, that I was very encouraged to hear David earlier this morning indicate that one way out of this would be to have a separate allocation to NERC, separate from the rest of the NERC budget, which I remark is not a unique solution. There are precedents for handling this kind of problem. My own view is that, if we move forward into the next CSR in this way, we will be able to defuse this in a way that Government can be confident that the wider interest is sustained and, on the other hand, we feel that we are in a position where we can appropriately balance our science.

Q68 Pamela Nash: You have highlighted the complexity of this issue, which again would lead me to think that there should be work with the Foreign Office at ministerial level when this decision is being made. My understanding of a research council is that it is a non-departmental body, so as you get the majority of your funding from BIS it would not be inappropriate for you to approach Ministers from other Departments when making a decision of this magnitude.

Edmund Wallis: That is something we can take away and think seriously about. The mindset I was in at the time was that by the time we had got—shall we call it CSR1?—the present CSR set and out there, allocated, people were operating to it. When we said that we had no intention of changing the name in any way in the South Atlantic, it meant that the name, the ships, planes and bases didn't change. It is those issues, I believe, that the Foreign Office is primarily concerned about. Therefore, Duncan at his level as CEO made it very clear to the Foreign Office that there would be no change as a consequence of this decision. In my mind, the click was, "We don't need to see a Foreign Office Minister." I am sure there would be times when we ought to do that, and we could and we would, but that was why we didn't on this occasion.

Professor Wingham: I didn't quite hear whether you were questioning what I said or agreeing with me because the acoustics in the room aren't marvellous. We are, as you say, a non-departmental body and we work in the first instance with our Science Minister. Particularly in an area of some tension it would be very unwise, and not conducive to good working together between Departments, if at our level we interacted with Ministers separately. It is much more

effective for us to work with senior people in the Foreign Office, one down from their Minister. We then report that through our processes, and, in an entirely proper way, the Ministers concerned can choose to have their conversation, and then it comes back down to us. I think that is the right way to do this. The danger if you go another way is the growth of confusions in various parts of Government, and that really isn't helpful.

Q69 Pamela Nash: Before I hand back to the Chair, we will agree to disagree—

Edmund Wallis: Okay, that's fine.

Q70 Pamela Nash:—because, for me, the advantage of being a non-departmental body is that you interact with other Departments.

Edmund Wallis: We will think very carefully about what you say, I promise.

Chair: Just before we close what has been a wide-ranging discussion, are there any other points you would want us to consider in drafting our report? Graham has one quick question.

Q71 Graham Stringer: Mine is not the same as the Chair's question but it comes from the same background. Having listened to you—you have answered our questions as directly as you could this morning—from the way the consultation and process has been structured, I have not heard the authentic voice of the British Antarctic Survey. If you don't think that's fair, I would like you to tell me why before we write our report.

Professor Wingham: My question would be: who is the authentic voice of the British Antarctic Survey? It would be quite wrong to imagine that the only mechanism of communication between the chief executive of NERC and our employees in Cambridge is a consultation process. These are our employees quite directly; we talk to them all the time. We have more than one mechanism of doing so. I myself visited BAS both prior to the consultation and afterwards and talked directly to staff. I have talked directly to the staff as a whole; I have talked to scientists in groups and to operations people in groups. It is certainly the case that the staff of British Antarctic Survey are not well represented in many of the statements in the press. Their view is much more nuanced. They are much more ready to realise that change is upon us; it is necessary to think about ways in which they can work with us to create a more sustainable future.

We have to isolate our staff and what they think and our communications with them, which in my view is an entirely proper and sensible process, from a great deal of the voice in the media, which is quite a different voice, I would say.

Edmund Wallis: Mr Miller, to conclude from our point of view, it has been hugely helpful to come here. We have listened very carefully and learned some lessons, and we will take those away. The important reassurance that we give you is that the CSR1 round is in place. That means that everything in the South Atlantic will stay exactly as it is until CSR2, whenever that becomes operational.

31 October 2012 Professor Ed Hill, Edmund Wallis and Professor Duncan Wingham

The consultation and deliberations that we as council are going through and the line that David referred to earlier are all issues as part of a debate and a set of considerations that will prepare us for how we take these businesses forward into the longer term and are really appropriate for CSR2—not CSR1. We fully understand that they are very serious considerations that we have to take. We have a lot of consultation. We will consider that carefully and make our decision tomorrow, or whenever we are ready to make it. We are not saying we will take it tomorrow.

I have no idea what decision will be made by council when it is made; that is for council, but we appreciate having been here. Thank you.

Q72 Chair: Thank you very much for coming this morning. I hope you don't feel you were railroaded here, but the timing was not of our making. We were hoping to invite you here later this month.

Professor Wingham: It is about events, isn't it?

Chair: Thank you for attending.

Written evidence

Written evidence submitted by the Research Councils UK

1. Research Councils UK is a strategic partnership set up to champion research supported by the seven UK Research Councils. RCUK was established in 2002 to enable the Councils to work together more effectively to enhance the overall impact and effectiveness of their research, training and innovation activities, contributing to the Government's objectives for science and innovation.¹

2. This evidence is submitted by RCUK and represents its independent views. It does not include, or necessarily reflect the views of the Knowledge and Innovation Group in the Department for Business, Innovation and Skills (BIS). The submission is made on behalf of the following Council:

Natural Environment Research Council (NERC)

EXECUTIVE SUMMARY

3. Developing understanding in marine and polar sciences is critical in underpinning economic growth and addressing the big societal challenges of global environmental change; food, resource and energy security and supply; pressure on natural resources and the prediction and response to hazards (environmental, geological and human). NERC is addressing all of these issues and examples are provided throughout the text and in Appendix 2.

4. Good progress has been made towards the greater coordination required to meet these challenges and NERC and the research community are playing an active part, for example by helping to set the direction of the UK marine science strategy and developing new collaborative programmes. Although there is some scope for improvement, as highlighted in the text, the Marine Science Co-ordination Committee (MSCC) is also moving in the right direction with regards to improved coordination and strategic oversight. NERC will also continue to build on its current strong and effective international collaborations.

5. Funding for marine science, in both polar and non-polar regions, remains a key part of the overall NERC portfolio. NERC's support for marine science will continue as a fundamental part of the new NERC strategy, seeking to deliver scientific excellence and impact in a challenging economic climate and to address the big societal challenges.

Q1 Since 2007 has there been improved strategic oversight and coordination of marine science?

Government framework

6. Yes. Recommendations were quickly acted upon across the public sector marine science community after "Investigating the Oceans". The Marine Science Coordination Committee (MSCC) (formed in 2008, with Ministerial oversight), and its working groups provide a forum for senior public sector scientists, policy makers and programme managers, from a broad range of government-funded organisations. This enables more integrated planning of research activities and helps to identify cross cutting interests and areas where there are gaps in observations and funding. NERC has been an active member of MSCC from the outset and contributes staff resource to the secretariat.

7. The publication of the UK Marine Science Strategy in February 2010, following consultation with the community, gave a clear indication of the direction government wished marine science to follow, identifying priority research areas, and a framework for joined up actions.

8. Many of the Government initiatives focus on UK waters, but there are many marine issues that significantly affect the UK that occur outside UK waters and even EU waters (eg food security and sea level rise). The Marine Act (2009) explicitly mentions UK Overseas Territories, and new Overseas Territories Bill address some of the wider marine issues, but there needs to be greater focus on marine issues from a global perspective.

NERC and science community developments

9. NERC has also responded directly to the call for increased strategic oversight and coordination. The NERC "Oceans 2025" programme (2007–12), of value £125 million facilitated more proactive, joined-up approach to funding and planning marine science activities across the then seven, NERC funded centres. This self-organisation, complemented by wider interaction with the community through the Strategic Ocean Funding Initiative was successful in forging long term partnerships both of research collaborations and for the delivery of underpinning science infrastructure.

10. NERC's 2010 sector level review of National Capability² enabled NERC to assess its portfolio of long term investments in marine science and infrastructure. Moreover in 2010 NERC brought together the NERC

¹ www.rcuk.ac.uk.

² National Capability is provided by NERC through support of environmental survey and monitoring; shared services and facilities; skills and expertise; research infrastructure and knowledge exchange.

managed components of the National Oceanography Centre, Southampton with the Proudman Oceanographic Laboratory in Liverpool to form a single NERC marine centre, the National Oceanography Centre (NOC). NERC tasked the Executive Director of the NOC, Professor Ed Hill, with delivering the marine science element of the NC review. NOC took on a leadership role for the wider NERC funded marine science community³ and is discharging this responsibility through formal interactions with its Delivery Partners⁴ and through the establishment of the NOC Association.⁵

11. In June 2012 NERC announced that it is considering a merger of the scientific and logistics management of marine and polar science delivered through its National Oceanography Centre (NOC) and British Antarctic Survey (BAS) and launched a wide consultation in September 2012. NERC Council will consider a detailed scientific and business case for the merger—being prepared by Professor Ed Hill (Director, NOC and interim Director, BAS)—in December 2012.

12. Through the potential merger, NERC aims to better exploit the many scientific and operational synergies between marine and polar science, increasing excellence and impact in these areas, whilst retaining current and planned activity in Antarctica and South Georgia. More integrated management of increasingly expensive major research infrastructure, especially the three NERC-owned research ships and a leased supply vessel, may achieve further savings through improved international partnership and cost saving opportunities.

External drivers for oversight and coordination

13. The Marine Strategy Framework Directive (MSFD) and its requirement for EU Member States to achieve “Good Environmental Status” by 2020 is forcing collaboration across the public and private marine science sector, as it is organised on a “Regional Seas” basis, and encouraging much better coordination with neighbouring marine States. The NERC’s marine science community contributed to the delivery of “Charting Progress 2” by Defra in 2010, which will form the basis of the initial assessment of UK waters for the Marine Strategy Framework Directive (MSFD). In addition, recent NERC/DEFRA co-funded and co-designed research programmes on UK shelf sea biogeochemistry, ocean acidification, marine ecosystems and the use of marine AUV and glider technology will deliver science outputs that will influence future assessments for the MSFD.

14. NERC and its centres are directly engaged in several developments at European level contributing to greater coordination at Member State levels:

- the Commission’s development of an integrated Maritime Policy,
- the development in 2008 of “A European Strategy for Marine and Maritime Research; a coherent European Research Area framework in support of a sustainable use of oceans and seas” and the implementation of actions therein,
- the development of cross cutting marine actions in the European Commission Framework programme (FP7) such as ERANETS,
- the development of a new Joint Programming Action initiative—with Oceans and Seas as one of its 10 topics—which aims to provide strategic alignment of research at European level. NERC, along with Defra, is leading the UK contribution to the development of JPI Oceans.⁶

Q2 What progress has been made in delivering the 2010 Marine Science Strategy?

15. The UK Marine Science Strategy identified three high level science priorities at cross-Government level. NERC’s strategic contribution to these priorities includes a range of established and forthcoming programmes and projects:

Understanding how the marine ecosystem functions

16. NERC’s forthcoming research programme, “Marine Food Webs and their Impacts on Ecosystem Services” (2012–17, £6 million) co-funded by Defra, aims to improve our understanding of marine ecosystems and the consequences for marine biodiversity of on-going environmental change, such as impacts by fisheries on ecosystem structure, eutrophication, pollution, climate change and growing human consumption and pressures. The outcomes of the programme, which will have a focus on the North East Atlantic and on UK/European waters, will provide important tools for exploring the impact of environmental change on marine ecosystems and testing potential management solutions.

17. NERC research is also contributing to an improved understanding of the sustained delivery of biologically based marine ecosystem services, for example through development of a framework for greater collaborative working in marine ecosystem modelling, building ecosystem components into physical ocean models and developing the capability to model varying levels of ecosystem complexity.

³ Effectively fulfilling the marine component of recommendation 8 of “investigating the Oceans”.

⁴ Those other centres delivering marine NC on behalf of NERC.

⁵ The National Oceanography Centre Association is currently comprised of the National Oceanography Centre, its Delivery Partners: British Antarctic Survey, Plymouth Marine Laboratory, Scottish Marine Institute, Sea Mammal Research Unit, British Geological Survey, Marine Biological Association, Sir Alister Hardy Foundation for Ocean Science, and 29 UK universities.

⁶ www.jpi-oceans.eu/

Responding to climate change and its interaction with the marine environment

18. Several NERC funded research programmes address the interactions of climate change and the marine environment, for example the *Arctic Research Programme (2011–15, £15 million)*, *Ocean Acidification (2009–14, £12 million)* and *RAPID-WATCH (2007–14, £15 million)*. Further detail on these programmes is provided at Appendix 2. Additionally, NERC's National Centre for Earth Observation (NCEO) uses a range of satellite data to quantify the impact of climate change and natural variability on both the physical properties of the ocean and on the ocean's carbon cycle.

Sustaining and increasing ecosystem benefits

19. NERC, in collaboration with Defra, have funded the Marine Renewable Energy Research Programme (2010–14, £2.4 million) to predict the cumulative environmental interactions of the scaling-up of “wet” marine renewable energy arrays (wave and tidal) with the overall aim of understanding the environmental benefits and risks on the quality of marine bioresources and biophysical dynamics of open coasts. This will contribute to the evidence base to predict the environmental implications of future marine renewable energy options and to the research capacity to deliver decision support about the biophysical properties of coastal and marine environments to promote renewables development with enhanced environmental benefits.

20. More generally the need to identify the impact of its research outputs and engage in mechanisms to ensure that these are fed into policy making is inherent in NERC's investments. There is still much work to be done however to ensure the planning and integration of scientific evidence and socio economic assessment is fully encapsulated in the formation of policy aimed at optimising ecosystem benefits.

Q3 How effective have the Marine Science Co-ordination Committee (MSCC) and Marine Management Organisation been, and what improvements could be made?

The Marine Science Co-ordination Committee (MSCC)

21. The MSCC has brought together senior representatives of the marine science commissioning and funding community under the direction of a Ministerial Marine Science Group. It has much greater authority, visibility and secretariat resource compared to that of the predecessor, the Inter-Agency Committee on Marine Science and Technology (IACMST).

22. By working closely with the marine science community the MSCC has achieved stronger collaboration in provision of marine manned and autonomous platforms, some progress in the alignment of science activities (particularly NERC/DEFRA) and has highlighted issues around the funding of sustained observations—though addressing these still require much work. The UK Integrated Marine Observation Network (UK_IMON) has been established to initiate a national approach to marine observation activities.

23. NERC is fully engaged with the MSCC, including provision of secretariat support via the National Oceanography Centre and NERC representation on all MSCC working groups. Participation in MSCC has significantly improved NERC's direct engagement with the other key funders such as Defra and Marine Scotland.

Scope for further improvement

24. The MSCC is not yet fully representative of the entire marine science funding community and private sector representation is not as strong as it was on the former IACMST. Whilst the Marine Industry Liaison Group (MILG) goes some way to addressing this need, its impact has yet to be fully realised.

25. Notwithstanding paragraph 24, the large size of the present MSCC and the fact that it meets only twice a year may be a barrier to effectiveness; a focus on the core funding organisations for marine activities could be helpful. An “MSCC Executive Group” involving the major funders and meeting more frequently might speed up decision making. The direct participation at the outset of influential departmental representatives in the MSCC meetings is welcomed and should be maintained.

26. MSCC is firmly seen as part of Defra by some observers, with the website placed within the Defra domain⁷ whereas the IACMST had its own domain⁸ which was neutral, conveyed authority, and was able to be rapidly reconfigured without the constraints of departmental processes.

Marine Management Organisation (MMO)

27. NERC and its centres are in a strong position to work alongside MMO to meet their research and environmental data needs. In terms of collaboration between NERC and the MMO, NERC's British Oceanographic Data Centre⁹ is well placed to provide input to the MMO, alongside the Marine Environmental Data Information Network (MEDIN)¹⁰ and the MSCC's coordination mechanism and portal for data from

⁷ www.defra.gov.uk/mscc

⁸ www.marine.gov.uk

⁹ www.bodc.ac.uk/

¹⁰ www.oceannet.org/

Government. Another link is that MMO is represented on the advisory board for the NERC-funded Marine Environmental Mapping Programme (MAREMAP¹¹) (See Appendix 2).

28. A more strategic engagement between NERC and MMO at the appropriate level might be helpful and NERC welcomes Dr Mel Austen's appointment from the Plymouth Marine Laboratory as the MMO's first chief science advisor. However, it is early days to judge the amount of pull-through of NERC science that contributes directly to the effectiveness of the MMO.

Q4 Has the selection of proposed Marine Conservation Zones (MCZs) been based on robust scientific evidence? How well has the scientific evidence been balanced with socio-economic considerations and communicated to affected coastal communities?

29. Although NERC has not played a direct role in the selection of Marine Conservation Zones adjacent to the UK coastline, it has provided significant levels of underpinning scientific data and evidence for decision making through sustained long term observations and British Oceanographic Data Centre resources,¹² the training of scientists and the provision of National Capability assets such as the British Ocean Sediment Core Research Facility (BOSCORF).¹³ Additionally the forthcoming NERC-Defra marine ecosystem programme will look at the impact of marine conservation zones.

30. Internationally, NERC scientists have contributed to decision making on Marine Protected Areas (MPAs) around the Antarctic Peninsula and Southern Ocean islands (BAS) and to the designation of the British Indian Ocean Territory (BIOT) as an MPA. The UK's designation of these large MPAs adds significantly to the proportion of the global ocean which is under some form of protection, though resources for enforcement are very limited.

Q5 How effectively does the Natural Environment Research Council (NERC) support marine science in polar and non-polar regions?

31. The oceans are the least understood part of our planet, yet they move 90% of the heat around the Earth; they are a major sink for carbon dioxide, they provide much of the food for humans; they are an enormous reservoir of non-living resources and the majority of all goods are transported by ships across the oceans.

32. Recognising the importance of the marine environment, NERC has invested heavily in science research, the maintenance of existing assets and the provision of new assets to address the critical issues in ocean science and to develop a significant level of expertise that is now being used to support the UK economy.

33. NERC has invested significantly in ocean research, some of the funding in responsive mode and some in directed, integrated programmes—often with co-funding from Government departments and/or international partners. NERC's strategic programmes continue to make major contributions to understanding how the ocean work and links to the other parts of the Earth system—the atmosphere, land, seafloor and cryosphere. The research is carried out in a range of institutes, including NERC's wholly owned centres, and over 25 universities. Further detail of research funded by NERC is provided at Appendix 2.

Financial trends

34. The summary of NERC's marine science expenditure 2007–08 to 2011–12 (Appendix A) shows an upward trend both in cash terms and, using the Government's GDP deflator, in real terms between 2007–08 and 2011–12. Expenditure has increased (excluding exceptional items) in real terms by around £12 million over this period, recognising the integral role of marine science as set out above.

Collaboration

35. In addition to the key scientific drivers for increased collaboration and coordination across the marine science community, a more collaborative approach is significant in ensuring that NERC's increased investment achieves optimum impact.

36. NERC has formed close collaborative partnerships since 2007 with marine groups across the UK and overseas. Before 2007, NERC had only one collaborative programme, "LINK Aquaculture", with DEFRA and SEERAD worth £5 million (1996–2004). Since 2007, there has been a step change in the number of collaborative programmes with eight marine science research programmes being co-designed and co-delivered with partners that include Defra, DECC, the Environment Agency and Met Office Hadley Centre. The total budget for these joint programmes is ca. £60 million and further details are provided at Appendix 2.

Impact of NERC's marine science

37. Evidence of NERC's impact in marine science, in both polar and non-polar regions, can be identified for each of its core activities, which are listed in further detail at Appendix 2.

¹¹ www.maremap.ac.uk/index.html

¹² www.bode.ac.uk/

¹³ www.boscorf.org/

NERC strategic and responsive mode research

38. The Intergovernmental Panel for Climate Change (IPCC) identified that melting ice is the largest uncertainty in predicting future sea level rise. NERC's British Antarctic Survey (BAS) scientists have produced the most accurate, comprehensive picture of the rapidly thinning glaciers along the coastlines of both the Antarctic and Greenland ice sheets. The findings are an important step forward in the quest to make more accurate predictions for future sea level rise.

39. NERC-supported scientists in UK Higher Education Institutions and BAS played a leading role in identifying the oceanic cause of the mass losses from the Antarctic continent. NERC is now embarking on its £7.4 million Ice Sheet Stability programme that includes a detailed investigation of how ocean water is giving rise to melting at the base of the grounded ice, and how the ice-sheet responds, to improve predictions of ice-sheet loss over the next 200 years.

40. In response to the increasing rapidity of change in the Arctic atmosphere, sea ice and ocean, NERC has invested heavily in the remote-sensing satellite Cryosat-2 and the application of results from NERC's National Centre for Earth Observation (NCEO) which have received widespread media coverage. The Arctic programme is NERC's largest single research programme and includes detailed investigations of the sources of fresh water in the Arctic and their implications for Arctic circulation.

41. As a result of NERC's RAPID programme (2000–08), in collaboration with the USA, Norway and Netherlands, and RAPID-WATCH (2007–14) in collaboration with USA, Germany & Canada, there is now (for the first time) an understanding of the variability of the Atlantic Overturning Circulation, and its influence on moderating European climate.

42. Research funded by NERC provided critical evidence to the Northern Fisheries Cooperative in Belize that led to a ban in 2009 on catching Caribbean parrotfish. These animals help maintain coral reef ecosystems that are vital to the livelihood of local fishermen. This is one illustration of the international impact of NERC's responsive mode research.

Provision of national capability

43. The cost of operating NERC's research ships is rising as a proportion of its budget due to fuel, a shrinking resource base etc. However, NERC is investigating the most effective ways of utilising and sharing these assets and continues to invest significantly in autonomous equipment which complements the measurements made from ships very effectively.

44. As a consequence of NERC's long term investment (see further details on the Marine Autonomous and Robotic Systems Facility at Appendix 2), Autonomous Underwater Vehicles (AUVs) are now an integral part of international marine science, with NERC-funded scientists and engineers leading the way in their innovative use. For example, due to new hardware and software designed by NERC's National Oceanography Centre (NOC), the latest AUV—Autosub Long Range—combines AUV and glider technology to operate at a unique combination of 6000m depth, a range of 6000km and an endurance of up to six months, revolutionising data gathering from the oceans.

45. PRIMER is a software package developed out of NERC funded research at the Plymouth Marine Laboratory and operated through a spin-out company PRIMER-E. It enables users to perform complex analysis of environmental datasets and has been used to inform the Environmental Impact Assessments of offshore wind farms. PRIMER is one of the leading industry standard packages for marine community and biodiversity research. Before PRIMER, it was not possible to analyse such complex data sets, so the effects of many marine activities were unknown.

46. Between 2007 and 2011, NERC funded 334 studentships that were classified as >50% marine, across a range of universities and institutes across the UK, representing an investment of ca. £28 million (based on approximate cost of £70,000 per studentship). Technical support staff, specialist engineers and other essential marine staff are trained by NERC and deployed as a resource used by the entire marine science community.

Activity underpinning knowledge exchange and policy formulation

47. The NERC Marine Renewable Energy Knowledge Exchange Programme (MRE KEP) was launched in April 2011, with a £1.5 million budget, to build stronger working links between the academic, public and private sectors and support them in delivering a sustainable future for marine renewable energy. The MRE KEP is working in partnership with the Offshore Renewable Research Steering Group (ORRS), a cross department group managed by the Marine Management Organisation and involving Defra, DECC and The Crown Estate among others.

National and international representation and coordination

48. A UK Arctic Office, hosted at BAS offices in Cambridge, was set up to coordinate UK research in the Arctic for NERC. In particular, it coordinates the logistical and polar infrastructure needed to make Arctic research possible. The Arctic Office services the agreement on polar research and logistical cooperation signed in December 2008 between the governments of Canada and UK. This includes sharing ships, aircraft and

research stations in both the Arctic and Antarctic to increase science cooperation, which paves the way for a greater understanding of the rapidly changing Polar regions. A similar agreement was signed with Norway in 2011. The recent report from the International Polar Year illustrates how international cooperation is necessary to address the effect of climate change on vulnerable polar regions.

49. The NERC funded International and Strategic Partnerships Office at NOC provides a focus for national and international representation, knowledge exchange and community coordination in marine science.¹⁴

Q6 How well are the current and potential impacts of global warming on the oceans (for example temperature changes and acidification) being monitored and addressed by Government and others?

50. As indicated in the opening remarks, there is enormous potential in the oceans and NERC recognises the on-going importance of understanding current and potential impacts on them.

51. Many of the challenges in understanding the oceans are so large that they cannot be addressed by a single nation. Therefore, international coordination is essential. There have been some international efforts over the last few decades but even greater effort is required in the future. The Belmont Forum was established in 2010 to strengthen engagement between the research funding agencies and to improve coordination of early phase engagement on significant science issues. This should lead to improve co-design, co-alignment, and co-funding of major research programmes.

52. The UK is very successful in engagement in EU initiatives. The developing Horizon 2020 programme provided the UK with an opportunity to shape the research agenda more effectively.

53. The UK government has been consistent in supporting marine scientific research in the oceans over many decades and the system for gathering observations we have today is the result of a long evolution towards an increasingly effective international Global Ocean Observation System (GOOS), and the evolving southern hemisphere equivalent SOOS. This is now largely based on a new generation of autonomous platforms and sensors such as the Argo network, ocean remote sensing satellites and robots such as NERC's pioneering Autosub series.

54. NERC is a key source of scientific advice to the Government and has made significant progress on monitoring and addressing the current and potential impacts of global warming on the oceans. There are some excellent long term monitoring sites operated by NERC in both hemispheres but the ocean is still massively undersampled—and less well sampled as a function of depth. NERC has addressed some of the outstanding areas with its strategic research investments eg the UK Ocean Acidification programme, but there is a considerable amount still to be done.

55. Further detail regarding NERC's engagement with and contribution to Government regarding impacts on the oceans is provided at Appendix 3. Through current and planned programmes (detailed at Appendix 2) NERC intends to tackle some of the on-going issues by:

- providing a greater understanding of the implications of ocean acidification;
- monitoring the risk to the UK and Northern Europe of any major changes in the ocean circulation of the North Atlantic (RAPID-WATCH);
- improving our capability to predict changes in the Arctic and understand feedback on the global Earth System; and
- developing a better understanding of shelf-sea biogeochemistry; ice sheet stability and the complex processes that go on at the edge of the continental shelf; which have impacts on climate, ecosystems and biodiversity.

56. NERC has invested heavily in infrastructure to ensure effective monitoring but with the increasing cost of the asset base, NERC faces some real challenges—seeking to do more with less. This will require new approaches and perspectives, underpinned by discovery-led science (the need for motivational and curiosity driven science) together with advances in autonomous and remote sensing technologies. Notwithstanding these challenges, the ability to observe and predict as the world changes remains critical. NERC will continue to work towards effective cooperation and optimal use of existing resources and expertise at national and international scales to ensure the UK remains at the world-leading level in these fields.

APPENDIX 1

HIGH LEVEL FINANCIAL OVERVIEW

MARINE SCIENCE EXPENDITURE—07/08 TO 11/12

<i>Expenditure heading</i>	<i>£m</i> <i>2007/08</i>	<i>£m</i> <i>2008/09</i>	<i>£m</i> <i>2009/10</i>	<i>£m</i> <i>2010/11</i>	<i>£m</i> <i>2011/12</i>	<i>£m</i> <i>Total</i>
1. Ship Operations expenditure (see 1)	12.83	15.15	14.77	15.48	16.46	74.68
2. Marine centres' expenditure (see 2)	28.14	26.08	24.82	27.22	23.96	130.22
3. Marine research programmes' expenditure (see 3)	5.74	9.86	9.09	11.65	13.76	50.11
4. Responsive mode expenditure	9.07	14.82	14.27	19.64	18.78	76.57
5. Exceptional items expenditure	0.97	1.14	7.39	11.49	36.97	57.96
Total (1+2+3+4+5)(see 4)	56.75	67.05	70.33	85.48	109.93	389.54
GDP Deflator	91.092	93.568	94.975	97.672	100	
Total Spend at 11.12 prices (incl. Exceptional Items expenditure)	62.3	71.7	74.1	87.5	109.9	405.5
Total Spend at 11/12 prices (excl. Exceptional Items expenditure)	61.2	70.4	66.3	75.7	73.0	346.7

1. Includes NOC ship operations expenditure on the *Discoery* and the *James Cook*, Excludes BAS ship operations expenditure on the *James Clark Ross* and *Shackleton*, which supports NERC logistic and research activities in Antarctica and so cannot be allocated as solely marine science expenditure.

2. Includes expenditure at the NERC Marine Centres (NOC, PML, SAMS, MBA, and SAHFOS) on National Capability (NC) and OCEANS-2025 Research Programme (RP) activities, Excludes the marine component of the BAS, BGS and NCEO expenditure on their NC and RP programmes.

3. Includes all marine research programmes (eg UK-Ocean Acidification, Marine Renewables, Coastal Sediment Systems), Excludes multi-science areas research programmes (eg Arctic, Ice Sheets, Technology Proof of Concept)

4. This is only the "total" of the marine expenditure that can be easily identified. Given the exclusions at 1., 2., and 3., NERC's actual marine science expenditure total will be significantly higher.

APPENDIX 2

FURTHER DETAIL REGARDING NERC'S MARINE SCIENCE ACTIVITIES

Research Programmes and Responsive Mode funding

1. NERC has formed close collaborative partnerships since 2007 with marine groups across the UK and overseas. Before 2007, NERC had only one collaborative programme, "LINK Aquaculture", with DEFRA and SEERAD worth £5 million (1996–2004). Since 2007, there has been a step change in the number of collaborative programmes with eight marine science research programmes being co-designed and co-delivered with partners that include Defra, DECC, the Environment Agency and Met Office Hadley Centre. The total budget for these joint programmes is ca. £60 million. Programmes include the £12 million UK Ocean acidification programme, (NERC/Defra/DECC), the £11.5 million Shelf Sea biogeochemistry programme (NERC/Defra), the £3.9 million Coastal Sediment Systems programme (NERC/Defra/EA), £15 million RAPID-WATCH research programme (NERC/Met Office) and the £2.4 million Marine Renewables Research Programme (NERC/Defra). Further details on all of these programmes are on NERC's website.¹⁵

2. Other community collaborations include the National Centre for Ocean Forecasting (NCOF)¹⁶ with the Met Office, NEMO ocean model¹⁷ with the Met Office, MAREMAP marine mapping partnership¹⁸ (NOC, BGS, SAMS and others) and strong links with marine partners in the European Union.

3. The new Arctic Research Programme aims to "improve our capability to predict changes in the Arctic, particularly over timescales of months to decades, including regional impacts and the potential for feedbacks on the global Earth System".

4. Looking to the future, NERC anticipates that approximately 25% (ie ca. £19 million) of the available NERC funding for research programmes will be awarded in the next 12–24 months on marine science grants

¹⁵ www.nerc.ac.uk

¹⁶ www.ncof.co.uk/

¹⁷ www.nemo-ocean.eu/

¹⁸ www.maremap.ac.uk/index.html

in programmes, such as Shelf Sea Biogeochemistry (NERC funds: £9.6 million), Marine Ecosystems (£5.5 million), and Autonomous Underwater Vehicles Technology programme (£1 million).

5. Marine Science Grant Awards—In the period 2007 to mid-2012, NERC funded 793 grants containing marine science, which equates to £153,667,156 being awarded on marine science research in this period; this is inclusive of all awards in responsive mode and research programmes and equates to approximately 26% of all NERC awards for marine science.

6. Polar Marine Science Grant Awards—Of the 793 grants containing marine science, 37% of the awarded grants included some polar related marine science—this was made up of 167 grants that contained an element of polar related marine science (ie <50%) and 129 grants that contained a significant proportion (ie ≥50%) of polar marine science. The funding for these 129 grants amounts to £33,196,551.

7. Of the 129 grants that contained a significant proportion of polar marine science, 44% were focussed on the polar north (with funding of £10,521,981 awarded) and 56% focussed on the polar south (with funding of £22,674,569 awarded).

8. NERC funding for marine polar south grants has been made largely through responsive mode grants. Some of our largest investments include: DIMES: Diapycnal and Isopycnal Mixing Experiment in the Southern Ocean—£3,780,209 (for marine component); Chemosynthetically-driven ecosystems south of the Polar Front: biogeography and ecology—£2,660,640 (for marine component); The role of krill grazing in Southern Ocean nutrient cycles—£528,506 (for marine component) and Gliders: Excellent New Tools for Observing the Ocean (GENTOO)—£1,070,531 (for marine component).

National Capability

9. Since 1965, NERC has evolved to provide the current core national capability services of ships, aircraft, computing facilities, highly skilled staff, Antarctic bases, research laboratories and national facilities and data centres that enable the UK to maintain its global leadership in ocean and polar sciences.

10. NERC has streamlined its asset base in recent years and focused activity on its wholly-owned National Oceanography Centre (NOC—Southampton and Liverpool) and the delivery partners at Plymouth Marine Laboratory, the Scottish Association for Marine Science (SAMS) and the Sea Mammal Research Unit at St Andrews (SMRU), the Marine Biological Association (MBA) and the Sir Alister Hardy Foundation for Ocean Science (SAHFOS). There is also a significant marine capability at the British Geological Survey, and at the British Antarctic Survey.

11. NERC operates the fleet of Royal Research Ships for open-water and polar operations, currently comprising of three ships that are owned by NERC—RRS Discovery (1962), RRS James Cook (2006), RRS James Clark Ross (1990), and one leased vessel RRS Ernest Shackleton.

12. 2012 marks the 50th year of service for RRS Discovery, and a replacement ship, also to be named Discovery, is currently under construction in Spain, due for delivery in August 2013. This represents a £75 million Government commitment to the future of marine science.

13. NERC ships provide the backbone of ocean-going capability for UK marine science institutions and universities. Formal barter agreements between NERC and international research ship operators also help to meet the community's requirements for access to ships of various sizes and capabilities and wider geographical coverage that would otherwise be possible with the existing fleet.

14. Marine Autonomous and Robotic Systems (MARS) facility—NERC has invested in a key area of future ocean technology since the late 1980s—autonomous underwater vehicles.¹⁹ As a consequence of that long-term investment AUVs are now an integral part of international marine science, with NERC-funded scientists and engineers leading the way in innovative use of autonomous systems and sensors.

15. NERC operates the National Marine Equipment Pool, the British Oceanographic Data Centre, British Ocean Sediment Core Research Facility, specialist laboratory equipment and highly skilled and specialised marine scientific staff.

16. Since 2008 NERC has also led the development of a highly innovative partnership with the CSIC (Consejo Superior de Investigaciones Científicas, Spain) to enhance marine seismic capabilities through the development of a world class trans-national capability for marine geophysics through a joint pool of UK-Spanish geophysics equipment and a trans-national team that can deploy from UK, Spanish and barter vessels. Similar initiatives are now being considered in respect of remotely operated vehicles.

APPENDIX 3

FURTHER DETAIL ON MONITORING AND ADDRESSING IMPACTS ON THE OCEANS

1. NERC engages closely with the Government departments most concerned with climate change and the marine environment (especially DECC and DEFRA) through regular bilaterals at Chief Scientist level. The increasing co-design of research programmes and exchanges of staff between the Council and departments also

¹⁹ noc.ac.uk/research-at-sea/nmfss/mars

helps ensure that NERC science outcomes can be fed directly into the policy making process. NERC is a member of LWEC.

2. NERC scientists were among the first to recognise and alert the world to the threat posed by ocean acidification. NERC has built upon that early start to become the world leaders in ocean acidification research, with a £12 million five-year collaborative programme jointly funded by NERC, Defra and DECC²⁰

The overall aim of the programme is to provide a greater understanding of the implications of ocean acidification and its risks to ocean biogeochemistry, biodiversity and the whole earth system.

3. NERC also recognised the risk to the UK and Northern Europe of any major changes in the ocean circulation of the North Atlantic, and has funded the RAPID-WATCH programme²¹ to follow the original RAPID programme and maintain an understanding of changes in the thermohaline circulation of the Atlantic through regular monitoring and an array of science moorings across the Atlantic at 26 degrees North.

4. NERC is beginning to develop a better understanding of the complex processes that go on at the edge of the continental shelf, which have impacts on climate, ecosystems and biodiversity through a new £4.5 million Shelf Edge programme.²²

5. In order to better understand shelf-sea biogeochemistry there is a five year, £10.5 million programme funded by NERC and Defra.²³

6. A new Arctic Research Programme will see £15 million available over five years, to improve our capability to predict changes in the Arctic, particularly over months to decades and understand feedback on the global Earth System.²⁴

7. Understanding ice sheet stability has huge implications for future climate and sea level and is being funded in a five year (2011–16) £7.4 million programme.²⁵

8. Other important marine parameters that impact on the UK and our neighbours include sea level rise and storm surges and NERC still has world-leading expertise in these areas, largely through the work of the Permanent Service for Mean Sea Level²⁶ and National Sea Level and Tidal Facility²⁷ at Liverpool.

9. Satellites are essential for gathering ocean and ice data all year round and the UK has a good record of leadership in satellite oceanography. For example, Cryosat²⁸ has since 2010 added to our understanding of marine and polar processes.

Written evidence submitted by Natural Environment Research Council (NERC)

THE PROPOSED MERGER OF NOC AND BAS

BACKGROUND

1. NERC UK marine and polar sciences are internationally excellent. One source of this UK strength is the strategic science of the NERC owned National Oceanography Centre (NOC) British Antarctic Survey (BAS), and a second is the NERC supported work of the UK Universities, and other NERC Centres, particularly the Plymouth Marine Laboratory (PML) and Scottish Association for Marine Science (SAMS) and the National Centre for Earth Observation (NCEO). Outstanding discoveries by UK scientists include the discovery of the ozone hole by BAS scientists and the draw-down of the Pine Island and Thwaites drainage basins in West Antarctica by UK Universities. Scientists from NERC Centres and UK Universities have played leading roles in obtaining the first ever measurements of the strength and variability of the Atlantic overturning circulation; in making fundamental discoveries in ocean acidification and iron fertilisation; in analysing the EPICA ice core that showed the close 800,000 year connection between climate and CO₂; delivering synoptic views of Arctic ice volume from the CryoSat satellite; and exploring the sub-glacial Lake Ellsworth.

2. NERC is committed to maintaining the UK's leading position in marine and polar science, and the present CSR settlement recognises the importance of NERC science to the UK economy, policy development and its quality of life through providing a ring-fenced level-cash resource budget to the UK research base. Nonetheless, NERC has had to accommodate a 3% cash reduction in its resource budget, amounting to an 11% real terms reduction by 2014–15. It also had its baseline capital budget reduced by 50%.

3. In preparation for the last CSR settlement, NERC undertook a science prioritisation across its entire science domain, which informed, following the announcement of the NERC allocation, its spending plans for

²⁰ www.nerc.ac.uk/research/programmes/oceanacidification/

²¹ www.nerc.ac.uk/research/programmes/rapidwatch/

²² www.nerc.ac.uk/research/programmes/shelfedge/

²³ www.nerc.ac.uk/research/programmes/shelfsea/

²⁴ www.nerc.ac.uk/research/programmes/arctic/

²⁵ www.nerc.ac.uk/research/programmes/icesheet/

²⁶ www.psmsl.org/

²⁷ www.pol.ac.uk/ntslf/

²⁸ www.esa.int/esaLP/LPCryosat.html

this CSR period to 2014–15. These plans have been given definite form through allocations for the entire CSR period to NERC Responsive Mode grants, directed Research Programmes and National Capability funding.

4. In the case of the NERC wholly-owned Centres (British Geological Survey (BGS), Centre for Ecology and Hydrology (CEH), National Oceanography Centre (NOC) and British Antarctic Survey (BAS)) these spending plans have been given definite form in Centre Activity and Resource Plans (CARPs). These are the agreed basis for Centre income and expenditure for the CSR period. The CARPs take into account the National Capability and competitively-won NERC income, and other external income (from, for example, other Government Departments, the European Union, and the private sector), and set this against the Centre's planned expenditure, including, particularly, staffing levels.

5. As part of its overall business planning, NERC will reduce staff costs at its Centres by around 8%, partly through losing posts and partly through refreshing its skills base, including replacing higher paid staff. The distribution of these reductions is not uniform across the Centres; in part this reflects the confidence with which specific Centre Directors expect to offset a reduced NERC NC funding through increased competitively-won or external income, and in part reflects the impact of increased logistical costs.

6. The marine sector, whose science prioritisation was widely consulted, placed highest priority on retaining the two “blue-water” ships (the *RRS Discovery* and *RSS James Cook*). In the case of the polar sector, and following consultations with stakeholder Departments, priority was given to maintaining the Antarctic bases, their supply, and levels of activity. NERC has stated consistently and publically that it will maintain its Antarctic activity at pre-CSR levels throughout the CSR period. The cost of these large-scale infrastructures is rising considerably faster than the headline rate of inflation, driven substantially by the cost of marine gas oil (which has increased by a factor of six since 2000). NERC estimates that by 2014–5 the cost of its large-scale infrastructure will have increased by £7 million over the CSR period, which is comparable and additional to the £9 million reduction in its total resource budget.

7. NERC has recognised that to contain the implications of these priorities in proportion to the pre-CSR budget division would result in a damaging reduction of the scientific capability of NOC and BAS. NERC has spread some of the cost associated with maintaining these priorities across its responsive mode and research programme lines. Nonetheless, mindful of its responsibilities under its Charter and the Haldane Principle, NERC's business planning has resulted in NOC and BAS making larger science staffing reductions than in its other Centres.

8. NERC has committed to the budget allocations for the CSR period to NOC and BAS set out in the CARP documents, which have also been made available to all NERC staff. NERC has no plans to change these allocations. Contrary to some reports in the media, NERC also has no plans to close its offices in Cambridge or to move significant numbers of staff between Cambridge and Southampton.

9. NERC is not able to speculate on the outcome of a future CSR settlement. However, in line with normal business planning, NERC is in a continuous dialogue with BIS and other stakeholder Departments as to the implications of possible future settlements.

THE MERGER PROPOSAL

10. At its May meeting, Council discussed how best to ensure that the UK sustains its leading role in polar and marine science. It recognised that a number of present “grand challenges” of marine and polar science are problems of great scale and complexity, and, in the Antarctic and Arctic, involve complex and poorly understood interactions between the ocean and the cryosphere. Examples include the sites, volume and variability of Southern Ocean ventilation, the deflation of the West Antarctic ice sheet resulting from warm water incursions from the Antarctic Circumpolar Current, and the increasingly spin-up of the Arctic Ocean resulting from sea ice retreat with its consequent implications for North Atlantic freshwater fluxes. Council was of the view that these scientific challenges, in the circumstances of a diminished scientific resource, demanded an integrated approach to its marine and polar strategic science, and to making the most effective and efficient use of its marine fleet.

11. At its May meeting, Council considered the business model of the scientific activity at British Antarctic Survey and noted a significant and increasing gap between its income in comparison with its present scientific complement. A cause of this income deficit, which has been apparent for some time, is that BAS is not recovering sufficient income from NERC research programme (RP) funding and has not build a portfolio of external income sources as have other NERC Centres. (The planned BAS competitively won income in 2014–15 is 22% of its total funding, in comparison with 36% for NOC, 59% for CEH and 57% for BGS.)

12. This situation is in part a reflection of the fact that RP is tensioned across all NERC science, and does not provide the same opportunity for Antarctic science as did earlier “core strategic” funding. Whilst funding models can and do change and it would be possible for NERC Council to reconsider the balance between research programme funding and National Capability funding, to do so as a way of solving a problem which is specific to Antarctic science would run counter to Council's objective of supporting the highest quality, highest priority science.

13. At its May meeting, Council therefore asked its Executive to examine a detailed science and business case for the merger of BAS and NOC for consideration at its meeting of December 2012, with a view to achieving four objectives:

- To provide a future pathway for NERC strategic polar science presently delivered by BAS that provided for the sustainability of the polar science activity.
- To integrate NERC strategic marine science presently delivered by NOC and BAS to allow for the most ambitious scientific programs addressing the large-scale complex problems of ocean and polar climate system.
- To integrate NERC ship planning, operations and future procurement to provide the most effective, combined strategic use of the NERC marine fleet, and to ensure that future NERC ship provision seeks to optimise blue-water and polar requirements in single ship purchases.
- To fully engage the wider HEI community in NERC polar science at a strategic level and through increased interactions with the university sector, and to provide transparent access to all NERC polar infrastructure in a similar manner to that achieved for NERC marine infrastructure.

The case for the merger in pursuit of these objectives was ably summarised by Lord Willis' address to the House of Lords on 18 October 2012.²⁹

14. The Chief Executive established a BAS/NOC Merger Team of senior BAS, NOC and Swindon Office staff that developed outline proposals in July and August 2012 and on this basis prepared a document for consultation which was published on 11 September 2012.³⁰ The Merger Team was led by Professor Ed Hill, Interim Director of BAS. (Appointments to interim or acting Director roles within NERC's wholly owned Research Centres are made by the NERC Chief Executive, in consultation with the Chairman of NERC Council. In the case of BAS, the appointment of an Interim Director in February 2012 was notified to BIS and to the FCO in advance of any announcement, recognizing their particular interest in the role.) The consultation period closed on 10 October 2012. In addition to a consolidated report on the outcome of the consultation, the Merger Team also generated a final report of emergent findings. One outcome of the consultation was the need for NERC to consider whether its objectives may be achieved through means other than merger. Therefore the NERC Executive has examined alternatives to the merger. The consultation outcome, the Merger Team final report, and the benefits and risks of alternative means will be provided to Council on which to base their decision.

15. The announcement of the consultation and the contents of the consultation document have occasioned widespread comment in the press. Much of this commentary has been confused and in a number of cases misleading as to Council's purpose and intention. In consequence, it was agreed in a Council teleconference on 19 October that, with the consultation completed and the final report of the merger team available to inform a decision, it was in the interests of NERC to reach a decision rapidly and end this speculation. NERC Council will meet on the 1 November to reach a decision on this matter.

16. A particular issue that has featured in press coverage is the extent to which the views expressed in the consultation will be fairly represented to Council. The NERC Chief Executive has asked Prof. Robert Allison, Vice Chancellor and President of Loughborough University, to provide independent assurance of the fairness of this representation. His findings will be tabled at the Council meeting.

17. As soon as possible after the Council meeting, NERC will prepare an announcement of the outcome of the meeting, including a consideration of the responses to the consultation and how Council took account of these responses. As part of this, Council will decide whether the consolidated summary, Prof. Allison's commentary and/or some other communications should also be made public. (NERC's earlier written evidence to this inquiry refers to a "business case" currently being prepared by Ed Hill for (then planned) December Council meeting. We have been requested in this submission to comment on whether this case will be made public. This document is that referred to above as the "final report" of the Merger Team and its publication will also be the subject of Council's decision on the communication of the outcome.)

October 2012

Written evidence submitted by the National Oceanography Centre

1. The National Oceanography Centre (NOC) is a wholly NERC owned centre undertaking research to address the oceans' influence, impacts and potential to help address the big societal challenges of food and energy sectors, biodiversity and climate change. Research priorities include the oceans' role in climate, sea level change, ocean acidification, and the changing Arctic Ocean. NOC underpins the UK marine science base long-term through the provision of infrastructure and long-term research capability, enabling the UK community to deliver world-leading science, as well as supporting national strategic needs.

²⁹ HL Deb, 18 October 2012, Cols 1612–1618 [Lords Chamber]

³⁰ <http://www.nerc.ac.uk/about/consult/bas-noc.asp>

DECLARATION OF INTERESTS

2. NOC hosted the secretariat of the former Inter Agency Committee on Marine Science and Technology (IACMST). Professor Ed Hill, Executive Director NOC is the NERC representative to the Marine Science Coordination Committee (MSCC) and NOC provides a small staff resource, NERC funded, as a contribution to the Secretariat. NOC staff have contributed to the development of the evidence submitted both by the Government (MSCC) and by NERC.

Q1. Since 2007 has there been improved strategic oversight and coordination of marine science?

Government framework

3. There has undoubtedly been an improvement in the strategic oversight and coordination of UK marine science since 2007. This can be attributed to a combination of factors, including the creation of the MSCC, the impacts of new UK and European legislation, and financial constraints that have led directly to self-organisation and closer collaboration between members of the marine scientific research community.

4. The establishment of the cross-departmental Marine Science Coordination Committee in 2008 has provided a “reinvigorated” and high-level Government forum for exchange of information and for strategic planning. The National Oceanography Centre has been actively engaged in MSCC from the outset. The Executive Director NOC represents NERC at MSCC and provides leadership for the NERC-funded research community and from within its International and Strategic Partnership Office³¹ (ISPO) NOC provides a modest staff contribution, NERC funded, to the Defra-led Secretariat comprising secretariat support and access to scientific expertise. This is built on the long-standing NERC/NOC provision of the secretariat to the former Inter-Agency Committee on Marine Science & Technology (IACMST). NOC staff members were instrumental in the development of the UK Marine Science Strategy, published February 2010, and participate actively in the various MSCC working groups.

Marine science community developments

5. Whilst the focus of the MSCC membership is on the key public-sector funders of marine science in the UK the marine science community has also taken steps to improve coordination and engagement, driven by the need to address big science problems which are not capable of being realised by one organisation alone. Collaboration is also driven by funding schemes at national and international level which have cross-community or cross border collaboration as a prerequisite.

6. NOC led the coordinated development and delivery of the Oceans 2025³² programme 2007–2012, the first time that the, then seven, NERC-funded marine centres had been pro-active in developing a joined-up approach to bidding and cooperating at programme level. Wider community engagement was achieved through the external Programme Advisory Board and through grants, studentships and community workshops funded via the Strategic Ocean Funding Initiative (SOFI). Scientific highlights and impacts are given on the Oceans 2025 website and these demonstrate the benefits of proactive collaboration in programme planning and execution.

7. In April 2010, the Natural Environment Research Council (NERC) announced the formation of the National Oceanography Centre (NOC) by bringing together the NERC-owned Proudman Oceanographic Laboratory in Liverpool and NERC-managed activity at the National Oceanography Centre, Southampton into a single institution. NOC also established a network of “delivery partners”³³ and this mechanism enabled a coordinated response to NERC’s national capability prioritisation exercise.

8. As is reported in the NERC response, in June 2012 NERC announced that it is currently considering the merger of NOC with the British Antarctic Survey.

9. The creation of the NOC in 2010 spawned a wider association of Universities and research institutions—the “NOC Association”—that provides a strong voice to the NERC, to Government and internationally on issues affecting marine science and its delivery. Over 25 UK based Universities and centres are represented, typically at level of Head of Department.

10. The NOC Association collectively developed a NERC marine sector research strategy, published in December 2011. “*Setting Course*”³⁴ sets out a broad view of the priorities for marine science and national capability within the context of the NERC and UK Marine Science Strategies. The Association is now gathering evidence to demonstrate the impact of marine science and is scoping the community in terms of its strengths, facilities and training capabilities—work within the academic community that complements the information gathering done at cross government departmental level under MSCC.

³¹ Formed 2006 at NOC. Initially called NOCs National Marine Coordination Office, the name was changed in 2011 to avoid confusing with the growing recognition of the MSCC brand.

³² See www.oceans2025.org

³³ Plymouth Marine Laboratory; Marine Biological Association; Sir Alister Hardy Foundation for Ocean Science; Scottish Association for Marine Science; Scottish Marine Institute; Sea Mammal Research Unit; British Antarctic Survey; British Geological Survey

³⁴ <http://noc.ac.uk/news/launch-vision-statement-uk-marine-science>

11. At European level NOC has driven forward the increased coordination and strategic oversight of marine science. Through participation in the European Science Foundation Marine Board NOC was instrumental in the development of community wide Declarations (Aberdeen 2007, Ostend 2010)³⁵ which have influenced the European Framework Programmes, the European Commission's Marine and Maritime Research Strategy and implementation of European Marine and Maritime policies. Further long-term coordination is anticipated through the new "Joint Programming Initiative" mechanism where JPI Oceans and Seas can offer a high level process for strategic planning and coordination at Member State level. NERC, with Ministerial agreement, was a founding participant and now leads for the UK, along with Defra, as the second UK departmental representative. The MSCC provides a channel for cross-departmental engagement.

12. At the level of research programmes and projects there is also increased international cooperation. For example NOC and its UK partners are leading discussions on the marine component of the International Carbon Observing system (ICOS). A European project led by NOC will coordinate deep ocean observation infrastructure and programmes such as RAPID-Wave, in partnership with counterparts in Germany, the USA, Canada and others are driving the research infrastructure and research that is monitoring changes in the circulation of the Atlantic Ocean.

13. New legislation has also been a major driver for improved strategic oversight and coordination of marine scientific activities. The Marine and Coastal Access Act (2009) and Marine (Scotland) Act 2010 encouraged closer links between marine science delivery organisations, and the European Marine Strategy Framework Directive's target of achieving "Good Environmental Status" by 2020 is already pulling together the efforts of Defra, NERC, JNCC, Marine Scotland, WAG and other players, building upon the work achieved by the community with "Charting Progress 2" in 2010.

Q2. What progress has been made in delivering the 2010 Marine Science Strategy?

14. Specific progress is reported in detail in the written evidence submitted by the Defra and by NERC.

15. The strategy is long-term and progress is still in early stages. For example the MSCC with NERC and UKMMAS support has instigated the UK-IMON (Integrated Marine Observation Network)³⁶ initiative (led by Cefas but with wide representation, including NOC, on a steering group) that will account for the majority of observations on UK shelf seas. NERC and the Environmental Research Funders Forum³⁷ contributed to the MSCC's Long-Term Sustained Observations working group, including helping to develop a decision support tool for identifying priorities in science funding.

16. The MSCC has built upon the successful Underwater Sound Forum started by the IACMST, including merging its work with that of the Military Underwater Sound Forum. This is an example of direct and productive collaboration between scientists, government, the armed services, and NGOs. NERC has also initiated work with MSCC on starting an Operational Oceanography Forum, to be launched in at a meeting at NOC in January 2013.

17. NOC is represented in the MSCC Communications Working Group, in the International Subgroup and in the Marine Industries Liaison Group and is engaged in discussion of science alignment and on provision of research vessels.

Q3. How effective have the Marine Science Co-ordination Committee (MSCC) and Marine Management Organisation been and what improvements could be made?

The Marine Science Co-ordination Committee

18. The MSCC has provided a forum within which the funders of UK public-sector marine science are able to work together. The fact that MSCC is overseen by a Ministerial Marine Science Group lends it an authority, which the predecessor IACMST lacked. Importantly from a scientific perspective this coordination mechanism is operating across the devolved administrations.

19. The presence of senior marine scientists on MSCC working groups has helped ensure that MSCC is informed by sound scientific advice. However it will be vital to ensure that the early levels of commitment and engagement by departments are maintained. Some observers believe that industry, NGOs, Learned Societies and Academia lack representation in the current MSCC structure. The NOC Association is playing a role to fill a gap in terms of direct engagement with the marine science academic community, and the secretariats are in close contact. Though it is early days more might be done to ensure that the actions of the MSCC are visible to the wider community.

20. Whilst there are advantages to having a large MSCC representing all funding departments, the size of the committee and gap between meetings slows decision-making. Perhaps a smaller Executive sub-group could be formed which meets more frequently in order to move things along at a sharper pace.

³⁵ Ostend Declaration 2010: <http://www.eurocean2010.eu/declaration>

Aberdeen Declaration 2007: http://ec.europa.eu/research/environment/pdf/aberdeen_declaration.pdf

³⁶ See <http://www.westernshelfobservatory.org/uk-integrated-marine-observing-network-ukimon-initiative>

³⁷ <http://www.erff.org.uk/>

21. Some MSCC strategies are proving hard to deliver within the resources available. For example, of the 9 objectives listed under the Communications Strategy only 3 can be supported in the short term. MSCC needs the resources and operational freedom to be able to work with others such as academia, research centres, NGO's and professional bodies to fully deliver their objectives. In certain situations the MSCC secretariat appears to have been hampered by having to operate within the Defra framework, for example the long delay in establishing a website.

Marine Management Organisation

22. NOC does not have any specific comments on the effectiveness of the MMO in respect of its core remit (licensing). NOC staff have been working with MMO and CEFAS to refine the licensing procedures for undertaking marine scientific measurements, but in general there have been comparatively few interactions to date with the MMO.

23. NERC and its centres (NOC and others) are in a strong position to work alongside MMO to meet their research and environmental data needs. The NERC-funded Marine Environmental Mapping Programme (MAREMAP)³⁸ aims to achieve common, national objectives in seafloor and shallow geological mapping addressing themes such as habitat mapping, Quaternary science, coastal and shelf sediment dynamics and the assessment of human impacts and geohazards in the marine environment. The MMO has a seat on the advisory board for MAREMAP.

24. The British Oceanographic Data Centre³⁹ provides a key data source for the MMO, and the Marine Environmental Data Information Network⁴⁰ is developing links with the MMO.

Q4. Has the selection of proposed Marine Conservation Zones (MCZs) been based on robust scientific evidence? How well has the scientific evidence been balanced with socio-economic considerations and communicated to affected coastal communities?

25. NOC is not in a position to answer these questions; indeed the second may be premature.

26. Much information exists already; strengthening the mechanisms of pull-through between the academic community and the MMO could be beneficial, particularly as the MMO's budget to commission new evidence is very restricted.

Q5. How effectively does the Natural Environment Research Council (NERC) support marine science in polar and non-polar regions?

27. NERC has provided detailed information on its marine science spend in its return. NOC welcomes the commitment to the replacement of RRS Discovery, and investments in autonomous underwater and remotely operated vehicles that will be of major benefit to the UK marine science community through the "Marine Autonomous and Robotic Systems" facility (MARS).⁴¹

28. NOC is a NERC-owned Centre that operates within the constrained funding environment of the outcome of the comprehensive spending review. NERC Council policy has been to increase funding for its Research Programmes (RP) (thematic), to maintain the Responsive Mode (RM) elements of funding and to decrease the percentage of its investment in National Capability (NC) funding.

29. In 2010–11 NERC's National Capability prioritisation exercise provided an opportunity for NOC to engage with NERC and the community to prioritise NC funding against funding scenarios. The necessary cuts for marine science are not disproportionate to those experienced for other areas of the NERC NC portfolio (of order 20% over the four year CSR period). The high cost of major infrastructure, eg ships, was a key driver of the scenarios in the marine science area.

30. NC is a significant part of NOC's income and hence NOC has taken action to meet the future income projections. NOC approached this in Spring 2012 by undertaking a voluntary redundancy exercise within its Directorate of Science and Technology (DST). The outcome is that some 35 science staff from this group (approx 25%) will have left by the end of March 2013. In this process NOC has maintained discipline spread and is well placed to operate successfully in an environment in which at least 50% of our funding will be won competitively. The supporting Engineering services are being reviewed and the Business Support Services will be restructured in 2013. The opportunity will also be taken to achieve efficiencies as a result of the proposed merger with BAS.

31. A number of new multi-funded research programmes have been developed to succeed the Oceans 2025 mechanism, and NOC staff compete successfully in open competition for such funds on the basis of scientific excellence. However the experience of the NOC research community was that marine biodiversity was not adequately captured in the early thematic programmes, and together with some delays in commissioning, this

³⁸ <http://www.maremap.ac.uk/index.html>

³⁹ <http://www.bodc.ac.uk/>

⁴⁰ <http://www.oceannet.org/>

⁴¹ <http://noc.ac.uk/research-at-sea/nmfss/mars>

resulted in a significant dip in bidding opportunities over the last two years. The programmes mentioned in the NERC evidence, now coming on stream, should help alleviate this situation.

Training the next generation

32. NERC supports development of the next generation of marine researchers. At Southampton the graduate school operates jointly across the NOC/University of Southampton site with total PhD students now numbering >190. Postgraduate students have access to the Centre's comprehensive array of cutting-edge equipment and facilities, an extensive level of resource that is not available in standard university environments.

Research to support UK Growth and Sustainability

33. Some examples of NOC research to support UK growth and sustainability are given in Appendix 1.

Q6 How well are the current and potential impacts of global warming on the oceans (for example temperature changes and acidification) being monitored and addressed by Government and others?

34. With funding from government via NERC and other departments, NOC scientists are at the forefront of research into the current and potential impacts of global warming on the oceans, and have played leading roles in understanding ocean acidification and change in the oceanic ecosystem. Although the underlying physics and chemistry is increasingly well understood, much remains to be discovered, there are major gaps in the understanding of complex biological systems, and there are likely to be climate "surprises". The monitoring of impacts of global warming is a long-term activity requiring multi-disciplinary study and close cooperation with international partners—the ocean does not respect human geopolitical boundaries.

35. *Current impacts.* NOC scientists contribute to the annual reports produced by the Marine Climate Change Impacts Partnership⁴² which illustrate the current state of knowledge of impacts on the seas around the UK. The next full report in 2013 will cover over 30 marine and coastal topics, and a Knowledge Gaps report was published earlier in 2012. The Defra-led "Charting Progress" series (most recently CP2 in 2010) pulls together the efforts of many in the marine science community to identify current impacts of both natural and anthropogenic change, including climate, and forms the basis of the initial State of the UK Seas assessment for the Marine Strategy Framework Directive.

36. Observational monitoring is not yet as joined up as it could be; UK-IMON (with MSCC oversight) should help, and the field of operational oceanography is still in its early stages. NOC is a partner in the National Centre for Ocean Forecasting, part-supported by the EU GMES MyOcean project,⁴³ which provides products based on assimilation of observations into forecast models. Defra has recently funded measurements of marine pCO₂/pH. NOC's major contribution to the North Atlantic moorings array used by the RAPID family of research programmes has substantially improved our understanding of the circulation of the North Atlantic ocean and the possibility of rapid changes in climate that could be caused by changes in circulation.

37. *Potential impacts.* Research continues across the UK marine science community to address potential impacts of climate change including ocean acidification, and NOC is a major contributor to those programmes. Scientists are beginning to be able to understand change at a much finer scale than before, and to make regional and decadal-scale predictions. There are still gaps in fundamental knowledge of the responses of biological systems in particular, made more complicated because anthropogenic impacts from fishing affect natural biodiversity so strongly that climate induced variations are harder to discern. We don't yet know how the loss of Arctic sea ice is affecting climate at regional scale, leading to uncertainties over the evolution of the UK's climate.

38. In collaboration with the Met Office NOC contributes strongly to future UK climate scenario construction, the joint ocean modelling programme, joint coasts ocean modelling, and collaborative work on the NEMO project. Together these models are becoming more accurate at predicting future climate, and are enabling scientists to understand how much of present day observed change is caused by human activities.

39. NOC scientists support the IPCC process in developing a UK/International consensus and mitigation strategies for global climate change, and provide the international coordination for the World Climate Research Programme on Climate Variability and Predictability.

September 2012

APPENDIX 1

EXAMPLES OF RESEARCH SUPPORTING UK GROWTH AND SUSTAINABILITY:

1. The research undertaken by NOC is contributing to Economic Growth & Societal Need. NERC-funded research and knowledge exchange at NOC is underpinning the growth of the nascent UK marine renewable industry; and new technology for satellite oceanography is supporting the growth of the UK space industry. Novel AUV and sensor technologies for seafloor and sub-seafloor imaging offers security applications for rapid

⁴² www.mccip.org.uk

⁴³ <http://www.myocean.eu.org/>

environmental assessment as well as new technologies that can support the growth of marine scientific/survey industries and the high-tech blue growth economy. Providing the critical flow of data applications direct to market is supporting coastal engineering, the leisure industries, and the growing field of marine spatial planning.

2. Oceanographic modelling is supporting the Met. Office's production of better weekly/seasonal climate services forecasting for agriculture/horticulture industries and flood warning for civil defence and the prediction of regional and global climate change assessments is informing Defra/DECC mitigation strategies. Better knowledge of probabilities of marine-sourced natural hazards (eg, sea-level rise, storm surge, tsunami) is used to make more efficient policy interventions or infrastructure investments (eg, Thames Barrier).

3. Seafloor biology/geology research will enable better policy outcomes for marine zone management, including marine protected areas, International Seabed Authority, UN General Assembly etc. Science capacity within the international Census of Marine Life project has underpinned UK position and implementation on various UN conventions on biodiversity/environmental protection.

4. Scientific evidence has been used to substantiate the UK's submission to the UN for an extended continental shelf where the UK will have sovereign rights over seafloor and sub-seafloor resources. Building science capacity in deep geophysics and rock physics, and seafloor observatories is enabling an expansion of deep-water/frontier oil/gas exploration and better imaging and extraction utilization of existing hydrocarbon reservoirs as well as a better understanding of the risk to the global seafloor cable network from continental margin/deep-ocean turbidite flows.

Written evidence submitted by the British Antarctic Survey

SUMMARY

The purpose of this submission it complements that of RCUK (NERC) by providing more detail particularly concerning the importance of the polar oceans in the controlling the global climate system, the impacts on sea level rise, and sustainable fishing in the southern ocean and the opportunities in the Arctic.

THE IMPORTANCE OF THE POLAR MARINE ENVIRONMENTS

1. The polar regions are changing are remote but what happens there affects us all.
2. The Southern Ocean is of global importance. It regulates the temperature of all the world's oceans and hence the climate system and contains the largest unexploited marine protein resource in the world. It is also the largest oceanic "sink", for greenhouse gases such carbon dioxide. It has fragile ecosystems and exceptional biological diversity that is unique. The Southern Ocean has the largest under-exploited marine resource left on the planet, but its exploitation is increasing very rapidly from a low base, with the Norwegians and the Chinese being pro-active
3. The Arctic is equally important. For example, about 25% of the oil and gas left on the planet is thought to lie under the Arctic Seas, the Northern Sea Route offers opportunities for faster, cheaper transit between Europe and the Far East but there are risks in exploiting these opportunities—see the recent report on the Arctic by the Environmental Audit Committee, for example.
4. The Arctic, and the Antarctic Peninsula are the regions in each hemisphere that are warming faster than any other on Earth, and the impacts are significant. For example the melting ice caps especially Greenland and the West Antarctic ice sheets are now contributing significantly to sea level rise. Sea level is rising about four times faster than 100 years ago. The concentrations of krill around South Georgia appear to have fallen by an order of magnitude in the last three decades. There is increasing evidence that the recent cold winters in the UK are related to the disappearing sea ice in the Arctic.

THE BRITISH ANTARCTIC SURVEY

5. British Antarctic Survey (BAS) is a component of the Natural Environment Research Council (NERC). This submission complements that of RCUK (NERC), and provides additional information on a few topics.
6. BAS supports stations in the Antarctic and South Georgia, five planes and two ice-strengthened ships. From a marine perspective, Rothera station (67° S; 68° W) has sophisticated marine laboratory facilities incorporating a cold water marine aquarium and a diving facility. The RRS James Clark Ross has advanced geophysical and oceanographic research capability. In addition to Antarctic research and logistics activities, she spends ~65 days per annum carrying out marine research in the Arctic. These assets are used to support the research of BAS, and the UK Universities.
7. The current BAS science research strategy is called Polar Science for Planet Earth (PSPE).⁴⁴ PSPE concentrates on key questions of global or fundamental importance that can be best answered by research in both polar regions. This inter-disciplinary strategy involves major research activity on the Southern Ocean—both physical and biological elements in understanding the polar oceans, and the marine ecosystems. In addition

⁴⁴ http://www.antarctica.ac.uk/about_bas/publications/pspe.pdf

the RRS James Clark Ross is extensively used for studies of the interaction of the ocean with the ice shelves, both from a modern day and a paleo perspective, and for marine geophysical survey.

8. In the Arctic, BAS operates NERC's research station on Svalbard, and the NERC' Arctic Office, the main objectives of which are to support UK Arctic researchers in establishing international collaborations and access to polar infrastructure operated by other nations, and to represent the UK in international Arctic science forums.

9. BAS is also responsible for coordinating and developing NERC's £15 million Arctic Research Programme, 2011–2015, aimed at understanding key current scientific uncertainties in the Arctic. BAS is also responsible for ensuring the Programme achieves impact through knowledge exchange

10. An important component of the works of BAS is to provide advice to Government concerning the polar regions but with a particular focus on three UK Overseas Territories, South Georgia, the South Sandwich Islands and British Antarctic Territory, sustainable management of the South Ocean fisheries, and about the Arctic.

11. BAS, in conjunction with the wider UK research community, cooperates with international partners and programmes to tackle pressing scientific problems. The size of the UK scientific operation in Antarctica is second only to the USA and the scientific outputs are the most highly cited of any nation operating in Antarctica. In the North, the Arctic rim countries dominate the science agenda but with the Arctic Office continuing to be more effective, and with NERC's Arctic Research Programme, the UK is playing a more leading role in many of the influential science committees and programmes such as the International Arctic Science Committee (IASC), and the Svalbard Integrated Observing System (SIOS), and through NERC's Arctic Research Programme.

12. BAS has a strong record of delivering scientific inputs to Government policy. These include:

- Antarctic Treaty including a recent development Marine Protected Areas in the Southern Ocean.
- Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)—the first international organisation to adopt an ecosystem framework for fisheries management providing a model for fisheries management now being adopted in many other fisheries.
- Management of the fisheries in waters surrounding the South Atlantic Overseas Territories (South Georgia and the South Sandwich Islands).
- Agreement on Conservation of Albatrosses and Petrels (ACAP)—part of the Convention on Migratory Species (CMS).
- Wider policy areas such as the Intergovernmental Panel on Climate Change and ozone.

Q1. *Since 2007 has there been improved strategic oversight and coordination of marine science?*

13. No comment

Q2. *What progress has been made in delivering the 2010 Marine Science Strategy?*

14. The focus of the Marine Science Strategy is essentially local to the UK and hence international waters and Overseas Territories are not included. However, the Overseas Territory Bill recently presented to Parliament does include important statements concerning the marine environment.

Q3. *How effective have the Marine Science Co-ordination Committee (MSCC) and Marine Management Organisation been and what improvements could be made?*

15. No comment

Q4. *Has the selection of proposed Marine Conservation Zones (MCZs) been based on robust scientific evidence? How well has the scientific evidence been balanced with socio-economic considerations and communicated to affected coastal communities?*

16. The Marine Protected Areas (MPAs) in British Antarctic Territory and around South Georgia both were heavily influenced by scientific evidence. The fundamental objectives of the MPAs are to:

- protect rare or vulnerable benthic and pelagic habitats;
- protect areas of ecosystem importance;
- protect trophically important pelagic prey species;
- protect areas important for key life cycle stages and processes for commercially important species;
- promote recovery of the marine ecosystem following historical harvesting; and
- maximise ecosystem robustness and resilience to climate variability and change.

17. There is still additional scientific evidence required to determine more robustly if the scale size of these MPAs is well matched to the size at which these ecosystems operate.

Q5. How effectively does the Natural Environment Research Council (NERC) support marine science in polar and non-polar regions?

18. RCUK (NERC) has provided detailed information on its marine science spend in its return including that of BAS.

19. About one third of BAS's core science funding from NERC is spent on marine-related science with significant additional income come from NERC's research programme and responsive mode grants, the EU and some other funding organisations.

20. BAS co-supervises about 20 PhD students in marine science, many of whom are supported by NERC. The students have access to a vibrant inter-disciplinary research environment often progressing to further research positions both in the UK and abroad.

Q6. How well are the current and potential impacts of global warming on the oceans (for example temperature changes and acidification) being monitored and addressed by Government and others?

21. In this section, examples are given of the progress made in understanding the marine environment in the polar regions and what steps are required to improve predictions and hence the better quantification of the impacts of warming.

The Southern Ocean

22. The Southern Ocean is disproportionately important in influencing the Earth system. It connects the major ocean basins, links the shallow and deep limbs of the overturning circulation, and exerts great influence on global biogeochemical and carbon cycles. The Southern Ocean is rapidly changing now, with potentially global impacts. These changes include a warming, freshening, and acidification, with concordant changes in the distribution of marine organisms and feedbacks on the global carbon cycle.

23. Via NERC's core funding of BAS and through NERC's responsive mode funding, critical advances have been made in understanding how the Southern Ocean and the Arctic influence the global system. Recent research has made significant progress in determining the sensitivity of the Southern Ocean overturning to changes in climatic forcing is one of the biggest unknowns in global environmental science today. This research has also identified the key locations and processes by which anthropogenic carbon is stored in the deep ocean.

24. The ocean abyss is not immune from climate change. The vast majority of the seabed of the World Ocean is ventilated by waters that form around Antarctica. These waters are warming significantly, most notably in the Atlantic and with particular relevance to the UK. This warming is important scientifically and for society, since it impacts on the rate of global sea level rise, benthic biodiversity, and so. BAS has clarified the causes of the warming of these abyssal waters in the Atlantic, hence improving predictability of future change. It has also progressed understanding of the concurrent freshening of these waters, highlighting their sensitivity to abrupt changes close to the Antarctic continent.

25. There is much effort globally in attempting predictions of future climate, and key to improving these is assessing the performance of current-generation climate models. BAS scientists have undertaken much work in benchmarking the performance of the latest IPCC-class models in the polar regions, with information being published and made available for the current Inter-Governmental Panel on Climate Change (IPCC) assessment.

26. The combination of these observational and modelling studies has highlighted the need to have higher resolution climate and Earth system models, which could then include some of the key processes currently missing from the present generation of models.

27. Data coverage in the Southern Ocean remains the sparsest globally, inhibiting our ability to detect, interpret, predict such changes and to robustly test the models. This need has led to the design and implementation of a Southern Ocean Observing System (SOOS), sponsored by the Scientific Committee on Antarctic Research (SCAR) and the Scientific Committee on Oceanic Research (SCOR), and endorsed by the Partnership for Observation of the Global Oceans (POGO) and the World Climate Research Programme (WCRP). It addresses six overarching challenges of high scientific and societal relevance:

- The role of the Southern Ocean in the planet's heat and freshwater balance.
- The stability of the Southern Ocean overturning circulation.
- The role of the ocean in the stability of the Antarctic ice sheet and its contribution to sea-level rise.
- The future and consequences of Southern Ocean carbon uptake.
- The future of Antarctic sea ice.
- The impacts of global change on Southern Ocean ecosystems.

28. SOOS is a global community effort with BAS playing a major role in developing the strategy and now taking the lead in driving its implementation. SOOS is already the primary system for tracking climate change in the Southern Ocean, and deriving information on its causes and consequences, including acidification and ecosystems response. As implementation progresses, the efficacy of the system will increase, enabling further

critical insight to be obtained. The data will be used to drive and constrain the next generation of predictive models, which is key to improving their performance. SOOS is a key area for NERC to continue to invest, especially given the UK's overseas interests and polar capabilities.

Southern ocean fisheries

29. Antarctic krill potentially offers one of the few remaining major under-exploited sources of marine protein. New extraction technologies and new markets mean that it is highly probable that the krill fishery will expand rapidly in the near future. Although the catch by the commercial fishery for Antarctic krill is currently restricted and in global terms is tiny, if appropriate management procedures can be agreed internationally, the total allowable catch could increase to 5.6 million tonnes, equivalent to approximately 7% of the global fishery landings currently reported by Food and Agriculture Organisation.

30. BAS scientists have played major roles in developing the present fisheries management system, but there are many challenges including the impact of increasing ocean temperature, ocean acidity and of harvesting—all factors known to drive ecosystem change. There is an imperative to maintain both the long term monitoring projects in the South West Atlantic, and for cutting edge science to determine the impacts of the multiple stresses on the ecosystem, and thus be able to have accurate predictions and thus sustainable management of this fishery of rapidly growing importance.

31. Currently the structure and functioning of polar ocean ecosystems is poorly understood and quantified in most regions of the Antarctic (and indeed Arctic). To provide circum-polar perspective on these topics requires international coordination and BAS scientists are playing a leading role the development of understanding impacts of climate change in Southern Ocean ecosystems through the international programme, Integrating Climate and Ecosystem Dynamics (ICED) which is sponsored through the international organisations IGBP and SCOR, and supported by the EU consortium EUR-Oceans. ICED results are demonstrating the need for further regional investigations to then integrate to the circumpolar scale.

Sea level rise

32. Sea-level is currently rising at a little more than 3 mm/yr, and the cumulative rise over coming decades to centuries will likely be sufficient to alter the frequency of flooding in most of the vulnerable coastlines around the world, requiring substantial investment, and relocation of populations from some areas.

33. The Antarctic and Greenland ice sheets were identified in the last assessment by the IPCC as the largest uncertainty in sea-level rise projections for the next 100–200 years. BAS research is aimed at reducing the uncertainties in sea-level rise through understanding the critical processes of ice-sheet change, the development of numerical models that can simulate those processes, and collection of a wide variety of data that show current and past changes in the ice sheet that are used to robustly test the models. The research is supported by NERC through both core funding and responsive mode grants.

34. BAS leads a major EU-funded programme ice2sea⁴⁵ which involves 24 institutional partners from (UK and overseas) and which will provide projections of the contributions of glaciers and polar ice sheets to sea-level rise for the next 100–200 years.

35. NERC's £7 million directed programme iSTAR, which is coordinated by BAS on behalf of and involves participants from around 12 UK HEIs, focuses on the Antarctic glaciers in the Amundsen Sea Embayment, that together account for ~10% of global sea-level rise. The programme involves a coordinated series of over-snow and ship-borne activities that seek to understand the present and future role of oceans in driving ice-sheet change.

The Arctic

36. NERC has funded a £15 million research programme with the fundamental aim to improve the UK's ability to predict changes in the Arctic, particularly over timescales of months to decades, and to determine the impacts on the Earth system. There are four main objectives:

- Understanding and attributing the current rapid changes in the Arctic.
- Quantifying processes leading to Arctic methane and carbon dioxide release.
- Reducing uncertainty in Arctic climate and associated regional biogeochemistry predictions.
- Assessing the likely risks of submarine hazards associated with rapid Arctic climate change.

The five year programme, being coordinated by BAS, started in 2011. The major field elements will be in summer 2013 and 2014.

37. NERC has also funded an Arctic Office, located in BAS. Its principal aim is to coordinate more effective UK science in the Arctic. The Office is also beginning to act as a knowledge base for UK business on topics

⁴⁵ www.ice2sea.eu

such as environmental issues associated with exploitation of energy, and transport between Europe and the Far East through northern sea routes. The market potential in these areas is significant.

September 2012

Written evidence submitted by Dr. Mike Richardson, CMG

BAS/NOC PROPOSED MERGER (AND A FORTHCOMING INTERESTING WEEK IN ANTARCTIC POLITICS)

You may have seen the article on the proposed BAS/NOC merger in today's on-line copy of the *Independent of Sunday* by Paul Bignell.⁴⁶ In that there is mention of NERC coming forward with alternative options. This is interesting, for up to now there have only been two options on the table—the merger, or the status quo. And NERC Chairman, Chief Executive and Council have all made it abundantly clear that they are not prepared to countenance the latter.

My concern remains that NERC in putting forward an alternative(s) will seek to promote a plan that would still see the BAS polar ships merged into one fleet operated by NERC. Superficially, this might seem attractive. But there is no financial, operational or management justification for doing so (I have commented separately, see the attachment, on the ship-merger issue in the light of the draft report from the MSCC). The potential danger of going down any such course of action is that, I fear, within a relatively short time, NERC will then seek to reduce their fleet number to three ships by cutting one of the polar vessels. (As the MCSS Report rightly indicates, cutting a government research vessel is the only way to save significant costs). But, as the MCSS report also warns, such action would leave the UK unable to meet its existing commitments to science, and thus this option is dismissed by them. Importantly, in relation to the UK's Antarctic programme and presence, any reduction in BAS' vessel capacity would have a very significant impact on the UK's polar science, safe operations, and footprint in Antarctica. It would almost certainly mean the closure of the newly opened Halley VI Research Station.

I would urge that the Select Committee asks to see the alternative options now being considered by NERC. I would further urge that the Select Committee instructs NERC to now go away, work up such alternative options in detail, with full justifications (including costings) and re-submit them for scrutiny by the science community and Select Committee before any decisions are taken on the future of BAS.

It would be most unfortunate if the issue was now to move forward based on an option, or options, that have been very hastily, and with no transparency, put together (in desperation) in Swindon in the face of the overwhelming opposition to the current proposal. That opposition has stemmed from hundreds of eminent and respected scientists, polar experts and politicians as well as the several thousand members of the public who have so far signed a petition against the proposed merger.

I believe that all along the main reasons behind the proposed merger have stemmed from power politics in Swindon rather than being underpinned by an objective and rational attempt at either enhancing the UK's polar and marine science delivery, or saving significant costs to the tax payer.

Finally, I would make the point that one unfortunate by-product from this whole episode is that, even if the merger does not now proceed, the existing NERC—BAS relationship, if carried forward, is unlikely to work (or at least to work in harmony). A great deal of trust and respect has been squandered by the way that NERC has handled this whole affair.

In consequence, the Select Committee might wish to consider recommending to Government that it explores a new and better way to manage the UK's prestigious polar research institute (BAS) before even greater damage is done to it.

NERC PROPOSED MERGER OF BAS AND NOC

Further to my covering correspondence there are two other matters that I would wish to bring to your attention:

- The benefits (or otherwise) of merging NERC ship operations; and
- The intervention made by NERC Chairman Mr Ed Wallis in the Palace of Westminster on 23 October.

(i) Proposed ship-merger

In my submission to NERC on the proposed BAS/NOC merger, a copy of which is before the Select Committee, I made reference to the several previous reviews of NERC/BAS ship operations undertaken in the past decade. All such reviews had concluded that the status quo (ie non merger) was the most appropriate and cost-effective way forward.

⁴⁶ <http://www.independent.co.uk/news/science/british-antarctic-survey-saved-as-merger-plan-is-scuppered-8229461.html>

NERC's latest proposition on merging the BAS and NOC ship operations is apparently based on enhanced efficiency and cost-savings (though these assertions are not then based on any given facts, financial figures or a business case in NERC's Consultation Document promoting the merger).

The rationale for vessel-merger needs to be set against the wider picture presented in the (as yet) draft report from the Marine Science Co-ordination Committee (MSCC) on "UK Marine Research Vessels—An assessment and proposals for improved co-ordination"

The MSCC (under Defra) examined the issue of research vessel operation in response to the House of Commons Science and Technology Select Committee's recommendation (in its 2007 report *Investigating the Oceans*), of increased co-ordination of government research vessels.

It is pertinent to note that although BAS is responsible for the management of two of the UK's seven large-scale ocean and global class of marine research vessels, they were not invited to participate in the MSCC group. Rather NOC, on behalf of NERC did so. The inference of this is that the proposed NERC merger of BAS and NOC is, at least regarding vessel management, already a reality.

Key findings of the MSCC report are that:

- Significant cost savings (to the tune of £millions) are only possible by rationalising the existing fleet, ie by reducing it by one (or more) vessels. But the MSCC report then notes that doing so "would currently result in non-delivery of the existing programme, in an environment of increasing Government demands and so is not thought to be practical or desirable".
- The only other options that provide any savings (and they are very modest) is either:
 - (i) the status quo with increased collaboration (status quo plus), or
 - (ii) integrated fleet management.

The MSCC have calculated that either of the above two options would only yield minimal savings (across the whole UK 7 vessel fleet) of £50,000 pa.

Since BAS already implements (i), there seems little or no virtue in adopting (ii). There would be no extra savings to be had. Furthermore, since the management of BAS' ship operations, as demonstrated by previous NERC ship reviews, is considered to be more efficient, with better science delivery, than those of NOC then any merger (of the sort proposed by NERC) would be perverse and illogical.

(ii) *NERC Chairman's Intervention*

At an Antarctic Reception in the Palace of Westminster on 23 October, hosted by Mr Neil Carmichael MP for supporters and stakeholders involved with the Antarctic Bill, Mr Ed Wallis (Chairman of NERC), without invitation, made an impromptu speech.

Mr. Wallis' presentation was variably misleading, disingenuous, erroneous and indeed "economical with the truth". Some examples include:

Staff Redundancies

Mr Wallis emphatically denied that there were any plans to sack people at BAS, and that NERC was not "...dusting off the P45s of a lot of other people "... "None of this is true" he stated.

The day after he spoke around 40 staff in BAS were notified that they were at risk of being made redundant, with a minimum of 18 scientists and five support staff to leave Cambridge by March 2013. Some of those individuals are shortly to go to the Antarctic for the coming austral season.

The role of BAS

Mr Wallis indicated that:

"We also have a philosophical problem with BAS in that though we say it is great, NERC is there to support top quality science and yet so often when you get involved in BAS you see more of a logistics organisation or a mapping organisation. But it is not a mapping organisation. It doesn't even do survey"

The Chairman of NERC appears to have a very poor grasp of what BAS actually does do, and how its functions are intimately inter-linked. BAS' predominant and priority focus is unquestionably top quality polar science. But to deliver that in the hostile and remote conditions of Antarctica then good supporting operations and logistics are vital. Running polar research stations with modern scientific laboratories, plus ships and aircraft with state-of-the art scientific instrumentation does not come cheap. But they are vital. Accordingly a significant proportion of BAS' budget has to be devoted to such logistics and large research infrastructure.

BAS does indeed do survey, and in doing so utilises sophisticated digital aerial mapping and satellite remote sensing techniques which have delivered very important results. (For example, BAS scientists have shown that glaciers on the Antarctic Peninsula are shrinking rapidly as a result of climate change. They have mapped 244 glaciers on the Peninsula and found that nearly 90% had retreated significantly in the past 50 years. The results were published in the prestigious journal "Science" in 2005).

Operating in Antarctica both on the science and logistics fronts without accurate surveying and mapping would be a nonsense. But BAS achieves this with an excellent, award-winning mapping unit which “punches well above its weight”.

A great strength of BAS, mirrored by very few other national Antarctic programmes, is that all of its operations in Cambridge are “under one roof”—science, engineering, logistics and administration. It is this aspect of BAS that is looked on with considerable admiration and envy by many other national Antarctic operators.

It would seem that this hang-up by NERC over the term “survey” is one of the principal drivers for a name change for BAS. And even on that aspect Mr. Wallis appears to indicate that the deal is done—not being proposed. He states “...and that is why we are changing the name....”

Commercial Opportunities

Mr Wallis drew a comparison between BAS and another NERC institute, the Centre for Ecology and Hydrology (CEH) inferring that BAS should adopt the same working model for raising finance through external commercial consultancy work. But whilst CEH has considerable opportunities for exploiting commercial opportunities with private companies in the UK, BAS in contrast has very limited options in the Antarctic or Arctic. At present, and through until 2048 all exploration/exploitation of minerals in Antarctica is prohibited whilst in the Arctic where the UK has very limited sovereign rights access to commercial opportunities is highly restricted. Mr Wallis’ contention that “This [ie the commercial application of science] is the way to go forward” is misguided as far as BAS’ sphere of operation is concerned.

Consultation Exercise

According to NERC a total of 370 submissions were sent in response to its Consultation Document on the proposed BAS/NOC merger. Some of those submissions were very detailed in their analysis of the issues. All submissions were, I understand, to be objectively evaluated by an independent reviewer (Professor Robert Allison, the Vice-Chancellor of Loughborough University) who would report his findings to NERC Council.

It was therefore extraordinary that ahead of that review the Chairman of NERC should publicly indicate in the way that he did that “...alot. of the 2 1/4 inches of consultation documents are hype—hot air”

For those who had taken considerable time and effort to contribute in good faith to the NERC Consultation exercise, including many staff members of both BAS and NOC, such a comment was disingenuous in the extreme.

With NERC having brought its critical Council meeting to decide on the merger forward by over a month, it is not clear whether the Allison review is complete, and if so, whether its findings will be available to the Select Committee or the Council meetings this week.

Financing

Mr Wallis also made reference to discussions between NERC and the FCO regarding possible dual funding lines for BAS in the future. Given that I understand that the exchanges between the two parties on this issue have to date been shrouded in secrecy, it is indeed surprising to hear the Chairman of NERC expounding on this issue to a public audience. There are those in Government I suspect who might wish that he had not done so.

Staff relationships

Lastly Mr Wallis ended his speech by saying “and the thing that encourages me a great deal is that when you go out and talk to the staff, the staff are very close to what we want to do”

Mr Wallis’ last visit to Antarctica was in January 2008. He has not visited BAS, Cambridge for more than a year.

His comment demonstrates a total lack of understanding and appreciation of staff attitudes towards the proposed merger. BAS staff en masse made it abundantly clear to NERC Council Members Professors Andy Watson and Mike Lockwood, and to the BAS interim Director, Professor Ed Hill at a staff meeting on 4 October that they were very strongly opposed to the proposed merger with NOC.

October 2012

APPENDIX 1

RESPONSE TO THE NERC CONSULTATION DOCUMENT

Dr. Mike Richardson, CMG (former Head of the FCO’s Polar Regions Unit (1992–2007) with involvement in successive NERC-related polar committees, viz: Review Panel on the Antarctic Funding Initiative (AFI), Science and Management Strategy Review of BAS, the BAS Review Group, and the NERC Polar Sciences Committee.

SUMMARY

The argumentation set out in the Consultation Document is inherently flawed:

- It is very apparent from the whole tenor of the document and the leading nature of the headings of the template for responses that a decision in principle on a merger between BAS and NOC has already been taken by NERC Council. In consequence, what is being addressed in the Consultation Document is little more than the implementation mechanisms of a merger rather than addressing the wider question as to whether a merger should take place, or not;
- It presupposes that BAS' status is comparable to that of any of the other (ie UK-based) institutions for which NERC is responsible. By doing so it misjudges the geopolitical implications of the proposed merger and especially the name-change, and the perception of the merger by the wider international community and other sovereign States (notably Argentina);
- It fails to provide any financial evidence of cost-savings from the merger. Where is the Business Plan? Indeed, the denial of any financial details to recipients of this "consultation" is little short of breathtaking arrogance;
- There are numerous assertions throughout the document that are not backed up by fact. (For a national scientific organisation that ought to have its decision-making based on logic, facts and data, the absence of quantitative evidence to justify the various assertions is unacceptable);
- The case for the merger leading to enhanced science output is poorly articulated—and again based on assertion, not evidence. BAS' science delivery, in terms of peer-reviewed papers per £, has for many years been the most productive of any national Antarctic programme. There is no evidential justification provided in the paper that a merger would further strengthen this position. Indeed, one could equally well argue the opposite case eg that certain elements of BAS' current world-class science such as Upper Atmospheric Physics would be cast adrift, and thus weakened under the merger plans.

As requested comments on the various sections have been set out below.

However, before dealing with detail, I believe it pertinent to address a series of much wider issues surrounding the governance of BAS; in particular whether a decision on the proposed merger ought to be taken wholly by NERC. I believe that it should not.

Rather, given the political nature of BAS' role, I would contend that Government (eg at the level of Cabinet Office, or above) should now step in and take responsibility for this exercise. Accordingly, and given that any responses to NERC are effectively to a body that appears less than objective on this issue, I have copied my submission, with covering correspondence, more widely within Government and Parliament (eg to relevant Select Committees), and elsewhere

POLITICAL AND GOVERNANCE BACKGROUND

BAS, as with any organisation, must be subject to periodic review to determine and enhance its efficacy. However, the notion that NERC alone (as is suggested by paras 9, 27 and 44) should be the sole arbiter of decisions, the implications of which go well beyond its remit as a Research Council, is fundamentally flawed. NERC has no expertise (nor should it have) on the complex geopolitics of the polar regions (particularly those relating to the Antarctic).

BAS has never been in the mould of a "standard" UK-based research institute. The Survey's predecessor (the Falklands Islands Dependencies' Survey—FIDS) was born in the 1940s out of a political imperative—to achieve a critical UK presence in the Antarctic Peninsula area. Subsequently, despite the fact that science output from BAS has achieved global acclaim, the political element of its remit is as important as ever because the UK's territorial claim to the British Antarctic Territory remains extant.

BAS/FIDS has never found an ideal home within the UK governmental establishment. Rather, it has oscillated between political oversight (provided by the former Colonial Office up to 1967), and science oversight (through NERC) since. Neither mechanism has proved effective in taking account of the dual roles of BAS to provide: (a) scientific excellence in polar science, and (b) ensure the UK's presence within the Antarctic/sub-Antarctic is adequately maintained. This is why the BAS Review Group was instigated in the 1980s after the Falklands' conflict, through the Cabinet Office, by the then Prime Minister. Its role was in part to mediate on such matters at high level as well as to provide objective Government oversight of BAS finances. But over the past year meetings of the Group have, it would appear, been cancelled by BIS, and the Group has not met at all during 2012.

Changes that affect BAS' status (such as the proposed merger, and the loss of the Survey's dedicated Director), or which remove or downgrade BAS' world-famous name and brand (ie the proposed name-change) will undoubtedly have significant reverberations across the international polar community. Concerns are already rife within that community of a perceived weakening of the UK Government's commitment to Antarctica that would be brought about by the NERC proposals (and here crucially, perception lies in the eye of the beholder, not with the drafters of a NERC document).

Whilst the UK has sought to separate out its interests and territories in the SW Atlantic and the Antarctic through the creation of legally and constitutionally discrete Overseas Territories (the Falkland Islands, South Georgia and the South Sandwich Islands, and the British Antarctic Territory) this is not so for Argentina. Its view has always been that such territories constitute an integral part of greater metropolitan Argentina. A weakening (or perceived weakening) by the UK in any one aspect of its presence in the region will almost certainly be construed in Buenos Aires as a lessening of HMG's commitment in the region more generally, and may well encourage Argentina to increase in influence in the region.

That is a dangerous slope on which the UK ought not to proceed.

RECOMMENDATIONS

If the review of the proposed merger between BAS and NOC (with all its adverse implications) is to continue (and it is a very big if), then I recommend that:

- The process be transferred from the direct responsibility of NERC to a wider independent authority in Government (the obvious candidate being the Cabinet Office), and that due weight is given in any decision-making to other relevant Government Departments (most notably the FCO, but also the MoD, DECC as well as BIS/NERC).

Furthermore that:

- In the medium to longer- term, the BAS Review Group must be reconvened to provide the proper oversight of BAS and the Group should be chaired by Cabinet Office (rather than as has been the case previously by the parent department of NERC ie BIS), and
- The funding and management model for BAS should be critically reassessed to ensure that appropriate weight is given both to the geopolitical element (providing the UK's major and year-round presence in the Antarctic/sub-Antarctic), as well as to a world-class polar science programme.

Such an arrangement might well suggest that the logical "home" for BAS is not necessarily embedded within NERC.

The issue that the Consultation Document addresses is of considerable importance. It deals with the future of two well established and internationally respected national research institutes and their many hundreds of staff. That the consultation paper is deficient in many key areas, and lacks quantitative evidence undermines its credibility. It raises serious questions as to (a) why this process has reached the stage that it has, and (b) the judgement of senior officials within NERC and its Council.

In essence, I believe that the Consultation Process, as currently constituted, should be terminated.

DETAILED COMMENTS

Section 1. Vision and Mission of the Centre (paras. 10–13)

The inference of para. 10 appears to be that the oceans and polar regions will become a focus for resources' exploitation (see also my comments in Section 3).

The whole thrust of this section is of a done deal/a fait accompli on the merger. No effort has been made by NERC to determine whether there is any wider support for the concept of a merger. In consequence the whole document addresses little more than implementation of a process rather than providing an argued case on the principle.

The last bullet point of para. 13 does not require a merger for its delivery. BAS has for many years been providing very effectively the very leadership and participation that is needed by the UK in the Antarctic Treaty System. What is apparent is that with a watered-down senior executive team in what would remain of BAS, and no dedicated institute Director (as set out in Section 5), the UK's leadership in bodies such as SCAR (the Scientific Committee on Antarctic Research), IASC (the International Arctic Science Committee) and COMNAP (the Council of Managers of National Antarctic Programmes (as well as the annual meetings of the Antarctic Treaty Parties and the Antarctic Fisheries Commission (CCAMLR)) will be diminished significantly.

Section. 2. Aims and Objectives of the Merger

Para. 14 appears to be the nub of NERC's aspiration for the merged institute. But the statement here presupposes that the international scientific competitiveness of the UK in marine and polar science is:

- (a) currently to be found wanting, and
- (b) can be enhanced by the proposed merger.

Neither case is substantiated by this document.

I cannot comment on the competitiveness of NOC. BAS, on the other hand, has repeatedly emerged as the most cost-effective of all national Antarctic operators in terms of science output per cost. Just how that competitiveness could be enhanced further through a merger is not addressed in the Consultation Document.

There are a number of comments made relating to cost-savings. The need for science delivery in the most cost-effective way is one of the three key rationales for this proposed merger between BAS and NOC (para. 1)

Furthermore, a principal objective of the proposed merger of the two institutes (para. 15) is given as “securing efficiency savings” (presumably meaning ultimately financial savings). Against this background it is inconceivable that NERC believes it credible to circulate a Consultation Document that fails to provide stakeholders (including presumably those within Government) of any scale of those savings—or indeed whether any at all would emerge from this proposed merger exercise. Paras 51–53 (the section on financial implications) says nothing meaningful, whilst para. 5 in a document of this nature is little more than a travesty.

NERC is acting way beyond its remit in indicating, as it does, in the chapeau to para. 15 that the objectives of merging BAS and NOC are being taken from “a UK perspective”. Such a perspective can surely only be taken by HMG itself. This is particularly the case when it comes to the more politicised implications that would inevitably stem from the proposed merger ie issues affecting the UK’s presence in the SW Atlantic and Antarctic.

SECTION 3 SCIENTIFIC, ECONOMIC AND SOCIETAL IMPACT OPPORTUNITIES (WHATEVER THOSE LAST THREE WORDS MEAN) (PARAS 16– 21)

The proposition that the scientific community will work more effectively together (para.17) ie produce more, and higher quality science simply by being shoe-horned into a restructured institute is an unfounded assertion. Where is the evidence to back this up? Synergy and co-operation across institutes and between scientists are commonplace. They will continue to be so, irrespective as to whether this merger proceeds or not.

Clearly, there are elements of BAS/NOC science that have commonality; these are largely related to marine biology and oceanography. But there is also a substantive mismatch between the breadth of the current science agendas of the two institutes.

An approximate estimate would suggest that a significant proportion of BAS’ science programme, perhaps as much as 2/3rds, lies outwith that commonality—and is thus not mirrored by NOC. This raises the question, unanswered by the Consultation Document, as to whether, and if so how, the majority of BAS science will be even catered for (never mind enhanced) under the merger scenario.

It could be counter- construed that most BAS science will be side-lined and ultimately discontinued under a unified institute. Indeed, there is more than a hint of this in the Consultation Document’s Fig. 1 (Pg. 7). This schematically sets out the “Science” foreseen of the integrated institute. This listing fails to include whole swathes of science* actively undertaken at present by BAS, but not by NOC. Whether this omission is accidental or deliberate is not clear. If the former, it reinforces a view about the competence of the Consultation Document; if the latter it suggests that indeed BAS’ science programme will be cut. This would inevitably have a knock- on effect on the level of the UK’s presence in the Antarctic/sub-Antarctic.

*Upper atmospheric and space physics/ionospherics

- Terrestrial ecology.
- Evolutionary biology.
- Sustainable fisheries.
- Space weather.

The inference of para. 18 is that there will be opportunities for science linked to “increasing economic activity in the oceans and polar regions (particularly the Arctic) in the coming decades”. This may be true of the deep ocean in relation to eg precious and semi-precious metals (eg manganese), and bioprospecting. The Arctic in contrast, insofar as its lands and maritime spaces fall almost exclusively within the sovereign jurisdictions of the Arctic States, will probably provide very limited access and opportunities. Within the Antarctic Treaty Area (south of 60oS) mineral resource activities (note not just extraction, as stated) are prohibited. This means that even research that has a commercial connotation is prohibited, and will remain so until 2048 unless there is a consensus amongst Antarctic Treaty Parties to lift the ban, or a 3/4s majority of Parties after that date.

It could be perceived that the ice-strengthened vessels of NERC, with Dynamic Positioning Systems (DPS) are particularly well suited to exploit commercial charter opportunities in eg the Arctic as is currently the case for the RRS *Ernest Shackleton* in the North Sea. However, the economic attraction of such charters would be offset by the fact that they would divert NERC vessels away from their primary task of providing specialised platforms for scientific research.

Most research related to economic activity associated with eg oil and gas exploration and exploitation tends to remain within the preserve of commercial companies (a) because the costs of technologies involved are considerable and thus often way above the budgets of academic institutes, or (b) due to commercial sensitivities.

Again, this significantly constrains the opportunities which para. 18 infers.

Section 4. Name of the new Centre (paras. 22–27)

Since I see no merit in the proposed merger, the issue of a name- change is somewhat academic.

Both BAS and NOC already have considerable international recognition in their own right. The notion that such recognition would in any way be enhanced by a name- change is no more than conjecture. The reverse, particularly in relation to BAS, is almost certainly the case.

BAS' name is, as stated in para. 26, "internationally recognised" (and highly respected). It should not be lost or watered-down by some generic, less than eye-catching, but probably very expensive, rebranding, ie "*The NERC Centre for Marine and Polar Science*"—a title that has all the hallmarks of nomenclature invented by Committee. The international polar community (at diplomatic and governmental level) has never even heard of NERC; nor has it any appreciation of the Council's functions. NERC, as an entity, simply has no brand appeal.

The proposition (para. 26) that under any merger the "physical infrastructure" of BAS might retain the BAS branding, but not the organisation itself, is little more than a fudge if other proposed changes such as the loss of a dedicated BAS Director are implemented. Any loss or diminution of the BAS branding is more than merely a presentational matter. It is a matter of substance when it comes to the perception (as it surely will in Buenos Aires) that the UK's commitment to the Antarctic and sub-Antarctic is weakening.

Section 5. Governance and Management. (paras. 28–53)

It is telling that in a document that fails to set out evidence-based reasoning for this proposed merger 26 of the 59 paras. of this paper are devoted to little more than process. Even then parts of this Section are stating no more than the obvious (paras 28 and 29).

More worrying is that one gets the impression that elements of this section are deliberately opaque, or even devious. For example:

- para. 36 provides the figures for the current operating budgets of BAS and NOC, but not what the budget would be under a unified structure; and
- In a similar, though converse manner, figures are provided of the staff complement after merger, but not what the existing complements of BAS and NOC are. (NB if this interpretation is not correct, then para. 36 and its table infer that there will be no staff redundancies—and therefore no cost- savings from this element of the merger).

Therefore, whichever way one looks at these figures they verge on the useless, since no comparisons pre and post merger can be made.

Section 6. Large Research Infrastructure (paras. 54–59)

There may be merit in amalgamating NERC vessel management into a single unit (and fleet). If so, any benefit of doing so is not set out in the Consultation Document. A cost-benefit and management analysis should have been provided (if necessary as an annex to the document) to back-up the case.

Numerous reviews of the efficiency of NERC and/or BAS ship operations have been conducted over recent years. These have included reviews conducted externally eg the King Review of 1999–2000 or internally by eg senior NERC officials (the Read Review of 2003). Further reviews were undertaken by NERC in 2008–09 and 2011–12. Each of those reviews of NERC ship operations was comprehensive in its assessment , examining:

- harmonisation of activities, staffing levels, costs, possible savings etc. etc.

Whilst successive NERC ship reviews have recommended closer working arrangements amongst the NERC fleet vessels (to the extent possible), each has also concluded that because of the highly integrated nature of the overall BAS operation in Antarctica the most effective (and cost-effective) way of managing the RRS *James Clarke Ross* and RRS *Ernest Shackleton* was directly through BAS. Indeed, the 2003 review even concluded that the Director BAS should take on the role of NERC "Director of Research Ships".

Against this backdrop of a series of in-depth vessel reviews, all of which came to a similar conclusion, it is curious that the Consultation Document should now arrive at a diametrically opposite position -but one based, it would seem, on no detailed assessment. Or, if such an assessment has been undertaken then the results of it are not being relayed transparently to the audience of the Consultation Document. It would be interesting to know what parameters have altered in the intervening time to overturn the previous prevailing views.

On the political front there is a potential pit-fall in bringing all NERC vessels into one fleet, under one new institute name. At present, two of NERC's vessels are flagged to the UK-register; two to the Falklands Islands' register. The ships on the latter are prohibited from access to Latin America ports (with the exception of limited access to Chile) as a gesture of solidarity with Argentina.

It is not implausible that this denial of access could be extended to any vessel which is perceived by those Latin American States as having a linkage, however tenuous, to the Falklands. If this were to happen to the RRS *Discovery* and RRS *James Cook* because they were seen now as also being "polar" in nature and by

implication associated with the Falklands, then it would significantly curtail NERC ship operations in the South Atlantic, and their access to South American ports.

Presumably that possibility (and risk) has been fully explored, and factored in?

Written evidence submitted by Dr John Richard Dudeney OBE

SUMMARY CONCLUSIONS

1. The NERC has not made an adequate case that a proposed merger of the British Antarctic Survey (BAS) and the National Oceanographic Centre (NOC) would be in the best interests of UK science, allow the saving of substantial costs or maintain HMG's foreign policy objectives in the South Atlantic and Antarctica. The merger should not proceed.

2. The UK would not be better served in the provision of marine research/logistic capability by bringing together the two BAS ships and the two ships operated on behalf of NOC under a single management and operational arrangement. Unless the overall number of ships is reduced there will be no cost savings, but there will be a significant loss of operational efficiency, especially for the Antarctic, but no increase in ship time availability for research.

3. A wider consultation should now be undertaken to determine whether the policy requirements of HMG would be better served by placing BAS, its funding and its assets, under a new management and oversight regime independent of the NERC.

SUPPORTING EVIDENCE FOR CONCLUSION 1

This evidence concerns the NERC Consultation Document.⁴⁷ My detailed response to this consultation has already been provided to the Committee so I will not repeat that detail here.

The consultation process that NERC has undertaken for the proposed merger is confused and fundamentally flawed. It appears that a paper concerning the merger was first put to NERC Council by the Chief Executive in May 2012. Council seems to have agreed to consider the proposal further and to have asked the NERC executive to prepare a detailed scientific and business case for consideration at its December meeting. As part of this process, Council asked that the NERC executive consult staff and wider stakeholders on how best to implement the proposed changes. The first public announcement by NERC that it was considering a merger "of the scientific and logistics management of marine and polar science" delivered by NOC and BAS was via a NERC press release dated 7 June 2012. The Consultation document does not ask for views on whether the merger should take place.

The decision that the merger should proceed appears to have been taken without any proper analysis of other options and without any staff work having been carried to determine whether there is a sound scientific or business case. All that the consultation appears to have been seeking is a discussion of the modalities of the merger. In the process of forcing ahead with the merger, three key BAS senior staff—Director, Deputy Director and Head of Corporate Services—departed from BAS, leaving it effectively leaderless.

As regards the strategic scientific case, what is contained in the consultation document is just a list of motherhood assertions with no supporting justification, and those assertions are attempting to address a problem that does not, in my view, exist. Many of the areas of possible joint research for the new Centre are already being undertaken through normal science collaborations. It is telling that there seems to have been no consultation with BAS or NOC science leaders over the scientific advantages of the merger before this document was prepared. The UK science community is world beating, it does not need to be shepherded or coerced into cross-disciplinary, cross institute or international collaborations where there is good science to be done. It is not organisational boundaries in general that hinder such collaborative science, but the behaviour of grant funding bodies when confronted with multi-disciplinary grant applications.

There is no doubt that there is synergy between some aspects of marine science and some aspects of polar science. But this is not a reason to merge institutes—such synergy could just as well be argued for atmospheric science, geological science, (or even space science in the case of BAS) or a whole list of other science disciplines. So, given the existing diversity of BAS science, it could be argued that the merger is as likely to close down the breadth of collaborations by focussing on just two areas. It would be better to let the two independent organisations (BAS and NOC) follow their ideas to the best science across whatever disciplinary or institutional boundaries are the most appropriate.

It seems to me that had this consultation document been put to an NERC research grant committee or to a Parliamentary Committee as a Green Paper for evaluation it would have been laughed out of court.

The United Kingdom is currently pre-eminent amongst the international community in Antarctic science and political affairs. That this is so, and has been so for at least two decades, is very well demonstrated by Dudeney & Walton (2012) *Leadership in politics and science within the Antarctic Treaty* Polar Research 31 DOI: 10.3402/polar.v31iO.11075 (available as a background paper for the committee), and by Dastidar (2007)

⁴⁷ NERC Consultation Document available at: <http://www.nerc.ac.uk/about/consult/bas-noc.asp>.

National and institutional productivity and collaboration in Antarctic science: an analysis of 25 years of journal publications (1980–2004) Polar Research 26(2); Dastidar, PG & Persson, O (2005) *Mapping the global structure of Antarctic research*. Current Science 89, 1552–1554; and Dastidar, PG & Ramachandran, S (2008) *Intellectual structure of Antarctic science: a 25 year analysis*. Scientometrics, DOI: 10.1007/s11192-007-1947-x. Given the Government's recent reaffirmation of the importance it attaches to its policy aims for the South Atlantic and Antarctica, any proposal for a change in the status of BAS must be judged by whether it will maintain (and even enhance) this international success, and there must be measurable indicators of success that demonstrate this is the case. No indicators for success are suggested in the consultation paper. Talk of scientific synergies between polar and ocean science is misleading unless HMG's requirements are met, because the imperative for British presence in Antarctica at the current scale is political and territorial (crucially the UK is a *claimant Nation*), and not scientific, even though the science is of outstanding international quality. This fundamental fact seems not to have been grasped by the NERC.

The reason that BAS is such a highly efficient, cost-effective, and above all very safe, organisation is because of the wholly integrated operation run under a single highly experienced management/leadership team in Cambridge. The culture of BAS is unique within the Research Councils with staff at all levels and all types of skill/trade (from space scientists to plumbers) coming together to deliver complex outcomes safely and effectively in a hostile, remote and objectively dangerous environment. One of the most important aspects of this “can-do” culture is high morale and motivation, and that morale comes from being proud to work for BAS. Creating high morale and effectively channelling that into consistently impressive performances takes years of high quality leadership but it can be lost overnight by inept management. NERC does not appear to grasp the realities of operating in such a hostile environment or the sort of inspirational leadership required to create and sustain a successful operation. It is noteworthy that the consultation document does not address the highly important issue of the damaging effect the merger will have on staff motivation and morale. The merger process has already led to the lowest morale that I have seen in BAS throughout my career there, and if spirit de corps is lost then those staff that can, will, opt to leave BAS. The merger will destroy the invaluable and widely admired integrated approach, reduce cost effectiveness, blur lines of command and control, and as a result put at serious risk the outstanding safety record of BAS.

The BAS should be maintained as a separate integrated polar research and logistics operation under the direction of a fulltime director and a strong internal management team. There is no case for moving away from this provided HMG wishes to maintain the current UK strategic presence in the South Atlantic and Antarctica.

SUPPORTING EVIDENCE FOR CONCLUSION 2

At a superficial level, there might appear to be a strong economic case for the BAS ships (RRS *James Clark Ross* and RRS *Ernest Shackleton*) and the NOC ships (RRS *James Cook* and RRS *Discovery*) to operate as a single integrated NERC fleet. Indeed, if the primary requirement is to make major infrastructure savings through a future reduction of the number of ships, then this would be easier to accomplish under unified management. It might also be argued that merger could release more ship time to meet research or operational needs. It is therefore not surprising that the possibility of an integrated fleet has been looked at by NERC on numerous occasions, with three NERC major ship reviews in the past decade and a further mini-review in 2011. However, no study has found that a merger made operational or financial sense.

The primary role of the two BAS vessels has to be the safe, effective and timely support of the Antarctic operation. This requires very capable vessels and a particular set of seafarer's skills (such as ice navigation, small boat operations, unsupported cargo operations etc), married with considerable general polar expertise and a high degree of independent tactical decision making by ships' Masters and senior officers that is not needed in the NOC operation, as well as close integration into the rest of the BAS Antarctic field programme. In general the BAS ships officers and crews stay with the organization as a career and build up enormous skill and experience, as well as maintaining a very high morale and a much admired can-do attitude (the latter is evident in the consistently high praise they receive from external science teams using the vessels), and an outstanding safety record. Because of the nature of the Antarctic operation BAS crew operate on a four month duty cycle, whereas for NOC the cycle is two months. Each crew changeover for the BAS fleet costs on average around £50,000. But the BAS ship operation is otherwise breathtakingly cost effective, with only 5 FTE shore-side staff involved in the management of the fleet. Full harmonization of the two fleets will require an expensive standardization of staff terms and conditions (BAS crews are on significantly poorer terms and conditions than are their contemporaries in the NOC fleet)—just the increase in the number of crew changeovers required per year for the BAS vessels would raise costs by as much as an extra £300,000 to £350,000. Hence it seems very unlikely that merging the current fleet would save any money whatever.

There is also a significant political issue that NERC has not addressed. The NOC vessels are registered on the UK shipping register, but the BAS vessels are registered in the Falkland Islands. It would be a very significant political signal to Argentina about the UK commitment to its policy in the South Atlantic for the ship registrations to be moved to the UK.

The BAS ships are, of course, also very highly successful platforms for science—particularly the RRS *James Clark Ross*, a world class research platform and the UK's only fully ice-strengthened research vessel. However, it is unlikely that the merger would release any extra ship time for science. JCR already spends almost all of the year at sea—normally she spends around seven months on her Antarctic deployment and the northern

summer on science cruises in the Arctic on behalf of the wider UK scientific community. The *RRS Ernest Shackleton*, on the other hand, is mostly used for Antarctic logistics support during the austral summer, though she also carries out some oceanographic research. But she also already spends most of the year at sea because during the boreal summer she earns BAS significant commercial revenue, mostly through carrying out an offshore oil support role in the North Sea but also increasingly for charter work around the Falkland Islands and South Georgia. Hence in neither case is there any spare ship time.

The case for merging the shipping fleet does not stand up to close scrutiny.

HMG has recently specified the size of the footprint that it wishes to see maintained within the Antarctic and South Atlantic (primarily South Georgia in the case of BAS). This footprint cannot safely be maintained with only one ship. Hence the real issue for HMG is the affordability of ships. The NOC fleet is modern (with the imminent replacement of *Discovery* by a new blue water research vessel next year). The JCR however is now 22 years old whilst the *ES* 17 years old. To maintain the footprint these vessels will need refit/replacement soon. Neither of the NOC ships could safely operate in the Weddell, Bellingshausen, or Amundsen Seas or the high Arctic, as they are not sufficiently ice-strengthened, and neither do they have any capability for the delivery of fuel, supplies or equipment to the Antarctic bases. So they could not provide back-up to the BAS fleet. The real question that HMG should be addressing is not the irrelevance of a NERC fleet merger, but rather how to ensure that the UK has two capable ships to safely and cost-effectively fulfill policy requirements in the South Atlantic and Antarctica while still providing the UK with world class marine research platforms for work in both polar regions.

SUPPORTING EVIDENCE FOR CONCLUSION 3

The predecessor of the British Antarctic Survey was born through a secret Cabinet decision taken on 28 January 1943 to establish a permanent presence by Britain in Antarctica to preserve our territorial claim in the face of Argentine territorial ambitions (see Dudency & Walton, 2011, *From Scotia to "Operation Tabarin": developing British policy for Antarctica*, Polar Record, CJO doi:10.1017/S00322474110005). From the outset until 1967 the UK Antarctic programme was to conduct an integrated programme of scientific research and survey. This approach has set the scene for the UK's approach to Antarctica which continues until today—a dual mission of presence and expert advice for policy reasons, and science using the opportunity for access to carry out a first rate programme of science crucial to the wellbeing of humankind. From the outset in 1943 until 1967 the UK Antarctic programme was under the auspices of the Colonial Office. In the 1960s, with the signing of the Antarctic Treaty, some in Government felt that the territorial imperative would naturally wither away, leaving science as the prime driver. The Colonial Office was looking for a new home for the BAS and finally it was transferred with a dowry of £1 million to the fledgling NERC in 1967. As the passage of time has revealed, the political imperative, far from fading away, remains an overriding issue. As a consequence, neither NERC nor BAS have felt comfortable in each other's company. It is not really appropriate for a Research Council to be involved in making decisions that significantly impact on HMG's foreign policy objectives in the South Atlantic and Antarctica, and it is not appropriate for there to be conflict or confusion over what is and what is not "Science Vote" money, or what science programmes BAS pursues. For BAS, (and here I speak from long and difficult experience), it is not acceptable to be dealing day to day with one master who is not at all comfortable with the dual mission of BAS, especially when there is another master waiting in the wings who can (and has in the past) stepped in to require action in ways that make the NERC/BAS relationship more difficult. Add to this unfortunate state of affairs the fact that NERC has never grasped the true nature and requirements for safely operating in Antarctica (as evidenced by the consultation), and the question must be raised as to whether NERC remains the most appropriate home for the BAS.

Given that NERC has embarked on this consultation on the future of BAS, why not do the job properly by considering all options, from the "do-nothing" option, to placement of BAS, its funding and assets outside NERC, (perhaps, either as an agency linked to an appropriate government department, or hived off as a free-standing research institute linked to Cambridge University, but with a clear objective to deliver the dual mission). I recommend that a fundamental review should now be carried out to look at all options for the future of BAS. It would not be proper for this to be conducted by the NERC and therefore the appropriate lead organisation would probably be the Cabinet Office.

SELECTED RELEVANT EXPERIENCE

Career as research scientist, base commander, research leader, division head within the British Antarctic Survey spanning 1966 to 1998, including two Antarctic winters and more than 20 summer seasons in Antarctica.

Deputy Director of British Antarctic Survey (1998 to 2006)

UK delegate to the Council of Managers of National Antarctic Programmes (COMNAP) (1998–2005)

Member of UK delegation to the Antarctic Treaty (1999–2005)

Chief Rapporteur to the XXIX Antarctic Treaty Consultative Meeting, Edinburgh, June 2006

UK Delegate to the Forum of Arctic Research Operators (FARO) (1999–2005)

Chief Officer of the Solar Terrestrial & Astronomy Research Working Group of SCAR (1992–1994)

Chair of the International Review Panel for the Finnish Antarctic Programme 2006

Past Chair of the IAGA Joint Working Group on Antarctic Research

Past Member Royal Society UK National Antarctic Committee

A Director and member of the management board of Antarctic Science Ltd

October 2012

Written evidence submitted by Robert Culshaw

BACKGROUND

1. From January 2006 until July 2012 I was Deputy Director of the British Antarctic Survey (BAS), with responsibility for all its operations (including marine) and for its safety in the Antarctic and South Atlantic.

2. Prior to that, I served in the FCO, where my last post was Director for the Americas and the UK Overseas Territories (including associated waters).

PURPOSE

3. I wish to convince the Committee that merging BAS with the National Oceanography Centre (NOC) in Southampton, or managing the two BAS ships from Southampton, would expose British nationals in the British Antarctic Territory and the adjacent maritime region (including South Georgia) to greater risk. It would also pave the way to weakening the British presence in this strategically important area. It would not save money or increase efficiency.

EVIDENCE

(a) *Safety*

4. I attach at Appendix A my input to the NERC consultation on its BAS-NOC merger proposal.⁴⁸ Having had personal experience of directing the BAS response to crises in the Antarctic and South Atlantic, I am sure that to involve managers in a different UK location with little or no knowledge of the Antarctic would weaken the UK's ability to promote safety and save lives in the region. The paramount need for safety must drive the organisational decision. That means continuing to give the BAS Director in Cambridge complete authority over all the BAS physical assets in the Antarctic, as has been the case for several decades. The integrated nature of BAS polar and South Atlantic operations (including close collaboration with the Royal Navy) has proved its value and should not be disrupted.

(b) *UK presence*

5. The Natural Environment Research Council (NERC) took decisions in Spring 2011 to close the Signy Island research station in the Antarctic and dispose of one polar ship (the Ernest Shackleton). They were prevented from doing either in this Comprehensive Spending Review period, but the merger now being proposed is designed to make reductions of that kind in the UK presence easier and less visible after April 2015. Since a significant part of that presence is maritime, and linked to the delivery of UK polar marine science, I think this is a proper subject for the Committee to consider.

(c) *Finance and efficiency*

6. NERC's own consultation document demonstrates no financial savings from the proposed BAS-NOC merger.

7. NERC has in the past decade conducted three internal Reviews of its ship management. The most recent reported in Spring 2012. I recommend that the Committee should ask to see those Reviews. They all conclude that no significant financial savings or efficiencies would result from a single management, and they recommend that BAS should continue to have responsibility for the two polar ships.

8. I would be glad to amplify this evidence, orally or in writing, if that would assist the Committee.

October 2012

⁴⁸ Not printed.

Written evidence from Dr Julian Huppert, Member of Parliament for Cambridge

I have the great privilege of representing BAS, and am familiar with the excellent work that it does. I have visited it and spoken to people about their activities both before and since being elected there. I hope the committee are already fully aware of the essential role it plays in doing fundamental science, and in critical environmental research.

I am extremely concerned about the proposals that are being made by NERC. It is already extremely clear that these proposals are damaging the reputation of BAS, locally and internationally, and is having very damaging effects on morale there, especially when coupled with the recently announced redundancy program.

I have been struck by the depth of resistance shown to this since the consultation was announced, not just among those directly affected at BAS (where there is extremely strong concern), but also among companies, NGOs and private individuals around Cambridge. A surprisingly large number of these have approached me unprompted to express their concern if the BAS presence, focus and brand were to be diluted.

While I understand the benefits of closer working between NOC and BAS, and between BAS and the University of Cambridge (which is underway in any case), I have now reached the firm conclusion that these proposals are a mistake, and run the risk of causing significant damage to the UK's quality of research and international reputation in this area. I am not persuaded that the case made by NERC so far is strong enough to go ahead with this proposal.

It seems particularly shortsighted to push ahead with these proposals in the year of the Centenary of Scott's death, and when because of the passage of the Antarctica Bill through Parliament, there will be especial Parliamentary scrutiny of this issue.

I have responded formally to the NERC consultation, and hope that they will look at the weight of opinion and abandon their proposals.

That consultation paper was very thin, and almost completely lacking in evidence for the proposed changes. I would expect more background and evidence for a RC consultation.

It was also lacking in vision and aims. For example, no reference was made to the fact that BAS works with a huge range of NGOs, especially in the conservation area. A focus on "human well-being, the national interest and the UK economy" neglects entirely a critical part of the purpose of these activities. The NGO community is concerned—one representative told me the changes would be "a huge loss".

Cambridge is the home (among many other things) to the Cambridge Conservation Initiative, which includes organisations such as Birdlife International, Fauna & Flora International, UNEP World Conservation Monitoring Centre and The International Union for Conservation of Nature; key international partners for this work. The downgrading of BAS that would result from these proposals would harm these links, rather than furthering them as the document suggests is the aim.

With regard to the ships merger, there have been I believe four studies in the past of this issue. In 1999 they concluded "That the BAS fleet continue to be managed as an integral component of the whole BAS operation as at present." In 2003 they wanted to ensure NERC "retains the current integrated nature of BAS ship operations". In 2009 a recommendation was "Existing ship-related organisational structures and governance arrangements within NOCS and BAS should remain as currently". The 2011–12 study has yet to report. As against this there is nothing I have seen to support the merger.

Given the harms to British science and reputation that would occur, I hope that the Select Committee will make it clear to NERC that they should abandon the proposals for a merger.

October 2012

Written evidence submitted by a BAS employee

We have three overriding concerns about the way the BAS-NOC merger proposal has been governed by senior management at NERC, in particular the Interim Director of BAS (Prof Ed Hill) and the Chief Executive of NERC (Prof Duncan Wingham). These are:

1. Staff at BAS were given conflicting messages, which could be construed as misleading, about the future of BAS throughout the past nine months. Evidence of this, based on oral and written communications to staff, is provided below.

2. Staff at BAS are of the view that the consultation did not comply with best practice:

- (i) although a concern about the lack of independent assessment of the consultation responses was raised by BAS staff at a meeting on 11 September, it took until 24 October for NERC to announce the appointment of an independent assessor;
- (ii) many decisions were announced in the consultation document but no scientific or financial evidence was provided to support those decisions; and

- (iii) it was made clear that the consultation was not about whether the institutes would merge but instead about how they should merge.

Evidence of each of these points, based on oral and written communications to staff, is provided below.

3. Staff at BAS have not had an independent leadership representing their interests during this period. Since January 2012, the BAS Director has left and been replaced by the NERC Chief Executive with an Interim Director who is also the Director of the very institute (NOC) with which there is a proposal to merge. The Interim Director has never visited Antarctica and since he started has only been in the BAS Cambridge building for an average of five days per month! The lack of leadership was further impacted as the Deputy Director and the Head of Corporate Services felt obliged to leave BAS during this time and were not replaced. !

These concerns were expressed by staff to two members of NERC Council when they visited BAS on 4 October, an audio recording is available.

Note: all quotes are supported by audio recordings, emails or typed notes, which can be made available.

1. Evidence that staff have been given conflicted messages/have been misled: Will BAS retain its identity or not?

20 March Duncan Wingham presentation to all staff: "There isn't a future in a single integrated institute [across all of NERC]. I don't think it makes much sense. There is considerable diversity in the NERC centres and there is strength in diversity. And I think we need as much to recognise the strengths of that diversity as any weaknesses it has. So just a message to you: certainly the future will be more evolutionary than revolutionary."

7 June NERC news item on public website: "NERC is considering a merger of the scientific and logistics management of marine and polar science delivered through its National Oceanography Centre (NOC) and British Antarctic Survey (BAS). A marine and polar headquarters would deliver a single management function whilst retaining the identity of the existing centres as component parts."

7 June Duncan Wingham Q&A to all staff: "NERC Council were firmly of the view that we should retain the present brands of NOC and BAS. But if you move to having a single shared management function, what do you call the shared management function? Does it have an identity? How does its identity relate to these two existing identities? There is no clear answer to that question today. But there is a firm view that we should retain the two existing identities. NOC has made a lot of effort to make the NOC brand successful in the marine domain. BAS itself has a very clearly understood brand and the brand extends beyond science and flags a group of activities in the South Atlantic which government is also interested in. We regard these things as fixed points."

7 June NERC FAQs: "BAS and NOC are strong brands that will be retained."

27 June Ed Hill email to all staff: "Stakeholders have been informed that the identity of the two centres would be retained."

31 Jul Ed Hill email to all staff: "I recognize that we have used a range of terminology to describe this merger. No doubt this has added to confusion about what is being envisaged. To be clear, therefore, the proposal is to combine the management of the science, logistics/infrastructure and support/administration functions of BAS and NOC. This would bring about a full merger of the two organisations to create a single new centre with its own identity. All staff would then work within this centre."

11 Sep Consultation document: "The effect of merging NOC and BAS would be to create a single new NERC Research Centre [the NERC Centre for Marine and Polar Science] encompassing marine and polar sciences with a single scientific vision, a single Executive Director and a single integrated management team... NERC considers that it would make sense to develop a new Centre identity that will subsume the BAS and NOC brands."

2 Oct Media statement by NERC: "There are no plans to close BAS or to close the BAS offices in Cambridge."

10 Oct Duncan Wingham meeting with science leaders at BAS: "BAS is an identity and a budget and a place... Reputations can be overstated. My real concern is the identity of a name [BAS] with a geographic footprint and that is a problem with the business plan. So I want to signal that change. I would be happy if there could be found a way out of this such that then the name is irrelevant... The name is not important to me. The merger splits the BAS identity, purpose, etc. This cannot be achieved by simply changing the funding structure."

2. EVIDENCE THE CONSULTATION DID NOT COMPLY WITH BEST PRACTICE

(i) Will there be independent assessment of the consultation responses?

11 September Ed Hill Q&A to all staff: "The communications team in Swindon is leading [the assessment of the consultation responses]. They will be farming out the answers to the merger team to deal with around particular areas. [We don't have an expert outside impartial group examining the results], it is being done by NERC. I can see that [one could give it to an outside organisation] but what one would get is a statistical

analysis and summaries, but we need people who are going to be involved in making the case and planning the merger to understand what is being said and what is being meant.”

(ii) *Why is there no of financial or scientific evidence for the proposed merger in the consultation document?*

4 October Ed Hill Q& A to all staff: “This is a point of confusion. The simple matter is that the financial and business case at present does not exist. That’s why you can’t see it. The merger team has been tasked by the Council on the basis of this strategic judgement that this is worth exploring, to develop a scientific and business case. We are in the process of developing the scientific and business case. Can I give you the numbers today? No because they do not exist, but they will exist to give to the Council.”

(iii) *Is the consultation about whether BAS and NOC will merge or has that already been decided?*

7 June Duncan Wingham talk to all staff: “It signals an intent of Council to go that way [merge NOC and BAS]... unless it turns out as a result of detailed planning or the consultation process that there are very strong arguments that it is an inappropriate way to go... This is the intention, this is the plan... even though there remains considerable uncertainty about the detail”

7 June Duncan Wingham talk to all staff: “Some words on what consultation means... it is very important in bringing together detailed plans that one provides every opportunity for people to raise concerns... so that to the extent that the planners regard this as desirable or necessary those concerns can be folded into the plan... It is in that way I understand ‘consultation’ and it is what Council mean when they say they wish the plan to be consulted... Would Council change its mind? Yes... On the one hand it is not a ‘done deal’, but on the other hand it isn’t a consultation on the ‘if’. We are not asking people whether they think this will be a good idea or not.”

11 Jul Ed Hill email to all staff: “The strategic case for merger is already considered to be very convincing and therefore the focus of the consultation will be on obtaining views on how best to achieve the combined management of marine and polar science, not whether to do this.”

11 Sep Consultation document: “Consequently, NERC is consulting its staff and stakeholders to invite ideas on how to implement the intended changes to achieve the strategic objectives.”

October 2012

Correspondence from the Chair of the Environmental Audit Committee to the Chair of the Science & Technology Committee

I understand that your Science & Technology Committee is planning soon to take oral evidence on the proposed merger of the British Antarctic Survey (BAS) and National Oceanography Centre, to create a new (yet to be named) “Centre”. The consultation document⁴⁹ on the merger, published by the Natural Environment Research Council (NERC), includes proposals for the research objectives of a combined organisation.

The Environmental Audit Committee has a number of major concerns about the merger and its possible consequences, in the light of our recent inquiry on the Arctic. Our report, *Protecting the Arctic*, was published last month,⁵⁰ and we are awaiting the Government Response. We would be grateful if your committee were able to take our concerns—discussed below—into account in the course of your inquiry.

There will inevitably be issues about the shape and scale of future research in the Antarctic if a merger proceeds. There will also be issues about the scale of any synergies between marine and polar research, and whether a merger would or would not benefit those synergies (our inquiry identified the links between climate changes in the Arctic and drivers operating at lower ocean latitudes such as the Atlantic’s thermo-haline circulation). These may be issues that your committee would look at. The purpose of this letter, however, is to highlight two areas of concern that flow directly from our Arctic inquiry—the need to protect existing NERC commitments for Arctic-specific research, and the dangers of a disproportionate focus on removing risk for natural resource commercial exploitation in the region.

THE NEED FOR ARCTIC-FOCUSED RESEARCH

In our *Protecting the Arctic* report we established that the UK’s Arctic research is very well regarded, not least because of its willingness to consider the read-across between Antarctic and Arctic science, and we highlighted the importance of an active UK scientific community working in the Arctic which gives the UK a direct presence on Arctic issues.⁵¹ We identified the value of further research on potential climate “tipping points”, such as the melting ice-cap and methane emissions from frozen ground and seabeds;⁵² which present enormous risks of dangerous climate change on a global scale.

⁴⁹ *BAS/NOC Merger Consultation Document*, Natural Environment research Council

⁵⁰ *Protecting the Arctic*, Second Report of Session 2012–13, HC 171

⁵¹ HC 171, para 147

⁵² HC 171, para 148

BAS operates NERC's research station on Svalbard in the Arctic. We took oral⁵³ and written evidence⁵⁴ from NERC during our inquiry. They explained their objectives for their £15 million Arctic research programme for 2011–2015.⁵⁵ BAS's Head of Arctic Office told us that that rate of expenditure was about five times what it was a decade ago.⁵⁶ It would focus on "improv[ing] our capability to predict changes in the Arctic, particularly over timescales of months to decades, including regional impacts and the potential for feedbacks on the global Earth System", and NERC identified specific underpinning research objectives.⁵⁷ That £15 million Arctic research programme is vitally important and should not be put at risk following any merger. Indeed, there is significant scope for further research, including on Arctic ecosystems which the BAS Head of Arctic Office considered would be a sensible future development.⁵⁸ The then FCO Minister for Arctic matters highlighted to us the scope for further Arctic research, on "black carbon", pollutants and biodiversity, which could increase the UK's influence in the region.⁵⁹

It is not completely clear from NERC's consultation document, however, whether a merger might at some stage put such Arctic research programmes at risk. The document speaks of a need to deal with "growing international scientific competition and more constrained funding resources".⁶⁰ An aim, it seems, is "securing efficiency savings by combining similar activities and creating a single management structure".⁶¹ It notes that consolidation of some corporate services functions of the two organisations would be "essential",⁶² but also that an objective is "strengthening ... operational flexibility to plan, operate and secure efficiencies across all areas of the new Centre's mission in the context of the constrained resources" [our emphasis added].⁶³ Worryingly, the document provides no information on expected financial savings from the merger, arguing that it would be premature to offer figures at this consultation stage.⁶⁴ That leaves us with a concern that savings would extend beyond administrative overheads into frontline research itself.

The minister for universities and science told the House on 23 October that "any changes would have no effect on the UK's commitment to scientific excellence in Antarctica nor on the existing footprint of scientific bases and research ships in the South Atlantic".⁶⁵ Although in response to a question on the Antarctic, that leaves open a question on the position of Arctic research. And there is of course a concern that it would be possible that Arctic (and indeed Antarctic) research could be squeezed by NERC later on, whether the merger proceeded or not.

RISKS OF A RESEARCH STRATEGY AIMED AT DE-RISKING DEVELOPMENT OF THE ARCTIC

Our *Protecting the Arctic* report highlighted the profound environmental and climate change risks from oil and gas extraction in the Arctic, and recommended that there should be a moratorium on drilling until certain risk-reduction conditions were satisfied,⁶⁶ and that the Government should seek to use its position as an observer state on the Arctic Council to bring such a moratorium about.⁶⁷

It is extremely concerning, therefore, to see in the consultation document:

"The oceans and the polar regions (particularly the Arctic) are 'frontier' environments where, of necessity, there will be increasing economic activity in the coming decades—not least because of increasing pressures on natural resources."⁶⁸

"A long term vision is needed", among other things, "to equip UK business and UK investors with the edge needed for de-risking major investment decisions in hostile, unfamiliar environments."⁶⁹ [our emphasis added]

The merged Centre would seek to "maximise pull-through of science to commercial and operational use".⁷⁰ [our emphasis added]

In similar vein, during our inquiry NERC told us:

"At present there is some disconnect between industry and the science base in the UK. The key issues are that the Arctic environment is very poorly understood, long term data series are very sparse and it is highly likely that there will be surprises and tipping points (abrupt irreversible

⁵³ HC 171, Ev 62–67

⁵⁴ HC 171, Ev 159

⁵⁵ HC 171, para 148 and Ev 159

⁵⁶ HC 171, Q 264

⁵⁷ HC 171, Ev 159 (paras 3–5)

⁵⁸ HC 171, Q 259

⁵⁹ HC 171, para 149

⁶⁰ *BAS/NOC Merger Consultation Document*, para 14

⁶¹ *BAS/NOC Merger Consultation Document*, para 15

⁶² *BAS/NOC Merger Consultation Document*, para 40

⁶³ *BAS/NOC Merger Consultation Document*, para 15

⁶⁴ *BAS/NOC Merger Consultation Document*, para 4

⁶⁵ HC Deb 23 October 2012, col 851W

⁶⁶ HC 171, para 106

⁶⁷ HC 171, para 155

⁶⁸ *BAS/NOC Merger Consultation Document*, para 18

⁶⁹ *BAS/NOC Merger Consultation Document*, para 19

⁷⁰ *BAS/NOC Merger Consultation Document*, para 21

changes in the environment). The NERC Arctic Research Programme, which aims to improve capabilities for predicting changes in the Arctic, as well as understanding the implications of Arctic climate change for policy-makers, is an excellent start but much more monitoring and research is required *to reduce the levels of uncertainty and hence risk*. Much of the necessary research can and should be done through international collaboration but this still requires the UK to invest in the relevant programmes.”⁷¹ [our emphasis added]

Research in the Arctic is essential to allow a better understanding of the environmental and climate change risks and to identify how such risks might be mitigated. While such research might incidentally make it easier for those engaged in shipping, fisheries and oil and gas extraction, NERC’s research should not explicitly facilitate commercial resource exploitation. Whether or not a merger proceeds, the Government should ensure that NERC’s objectives (and BAS’s objectives or any new Centre’s objectives) should not be directed towards “de-risking” the exploitation of natural resources in the Arctic (or indeed, for that matter, the exploitation of the oceans).

In view of the issues raised here, and in the absence so far of a compelling case for the organisational rationalisation, I consider that the merger should not proceed.

I am copying this letter to the minister, Rt Hon David Willetts MP, and to the chair of the NERC Council, Edmund Wallis.

26 October 2012

Correspondence from the Chair of the Committee to the Chief Executive Officer, Natural Environment Research Council, and Chair of the Natural Environment Research Council

It was with some concern that I received the news this evening that NERC had decided to bring forward its meeting to consider the merger of the British Antarctic Survey and the National Oceanography Centre. I know that there are real concerns over the proposed merger from some eminent scientists and that the feelings of the scientists concerned are overwhelmingly opposed to the merger.

I felt that the significant amount of information received by the Committee from those opposed to the merger warranted a public hearing of the issues. I was therefore understandably disappointed at your change in timetable which would mean that the decision was made weeks in advance of the planned Committee meeting.

To enable both the needs of NERC and those of my Committee to be met, I would like you to provide my Committee with the promised written evidence by the end of this week and for you to come to the Select Committee next week. This would enable the proper public scrutiny of merger of these institutions to take place and for my Committee to be able to inform any decision NERC may take on the matter.

24 October 2012

Correspondence from the Executive Director, National Oceanography Centre to the Chair of the Committee

Thank you for the opportunity to meet with the Science & Technology Committee yesterday to give evidence on the subject of the proposed BAS/NOC merger. I personally felt that I was given a fair hearing and grateful for your chairmanship in that regard. I will not comment on the published report in this letter.

However, I have to say that I was disappointed with the last sentence of the quote in your name relating to the merger,

“Given the world-renowned and respected brand of the British Antarctic Survey it should require the strongest possible case to be made to merge it into a science institution that does not have the same iconic status.”

I appreciate the general thrust of the point you are trying to make as the brand and identity is are important issues and emerge strongly from the consultation. However, whilst it is true that the NOC brand is not as established at the BAS brand, I believe many staff in the NOC would justifiably feel upset, if not insulted, by this remark. It is wide open to be misconstrued as meaning that in your view NOC (as a science institution without the same iconic status as BAS) means an institution whose science quality or importance is of lower status. I am sure you did not mean this, especially given your knowledge of the work of the NOC—but this is how it comes across.

If there is anything you can do to help rectify any unintended connotations of the quote—especially if it were picked up in the media, I would very much appreciate it.

1 November 2012

⁷¹ HC 171, Ev 159 (para 17)

Correspondence from the Chair to the Director, National Oceanography Centre

Thank you for your letter regarding the evidence session and the subsequent press release.

I am sure that you understand that my comments were in no way intended to cast any aspersions on the National Oceanography Centre. The quote was carefully worded and I am certain that you understand the difference between a quality institution and an iconic one. I know that the highly educated people at NOC would also see that distinction. The statement clearly does not contrast BAS and NOC but instead BAS with whatever NERC institute title that may have resulted from a merger. That title would be unlikely to have the iconic status of either NOC or BAS.

However, I would hope that you can pass on to your staff at NOC that the whole of my committee recognises the quality of the work they undertake

The Committee's marine science inquiry will be in full swing by the end of this month and I am sure that many of the broader-science issues can be more fully explored there free from the sensitive issue of mergers.

1 November 2012

Further correspondence from the Chair to the Chief Executive Officer, Natural Environment Research Council

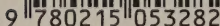
On behalf of my Committee I would like to thank you for taking the time to come before the Committee and answer questions on the subject of the proposed merger between British Antarctic Survey and the National Oceanography Centre.

I hope that the report was useful in informing the deliberations of the NERC Council on 1 November and in coming to the decision not to merge the two institutions. I would like to invite you to respond to the Committee's report and recommendations. I would hope that while you focus on the recommendations in the report that you also respond to some of the other concerns expressed within the text. I believe that everything within the conclusion chapter is worthy of consideration and response.

In addition, when you have looked at the transcripts of the evidence session we would like you to clarify particular points that the oral evidence left potentially uncertain.

The Committee would like to better understand the sequence of events by which Professor Hill was appointed, particularly why he was a better choice than the Deputy Director who was in post at that time. We would also like to have some clarity on the plans to appoint a Director to NERC who will be able to engage the willingness to develop and grow communicated to us by Professor Hill and ensure a future for BAS as prestigious as its past.

2 November 2012



Distribution by TSO (The Stationery Office) and available from:

Online

www.tsoshop.co.uk

Mail, Telephone, Fax & E-mail

TSO

PO Box 29, Norwich NR3 1GN

General enquiries: 0870 600 5522

Order through the Parliamentary Hotline *Lo-call* 0845 7 023474

Fax orders: 0870 600 5533

E-mail: customer.services@tso.co.uk

Textphone: 0870 240 3701

The Houses of Parliament Shop

12 Bridge Street, Parliament Square

London SW1A 2JX

Telephone orders: 020 7219 3890

General enquiries: 020 7219 3890

Fax orders: 020 7219 3866

Email: shop@parliament.uk

Internet: <http://www.shop.parliament.uk>

TSO@Blackwell and other Accredited Agents

© *Parliamentary Copyright House of Commons* 2013

This publication may be reproduced under the terms of the Open Parliament Licence, which is published at www.parliament.uk/site-information/copyright/

ISBN 978 0 215 05328 2